

1/46

FIG. 1A

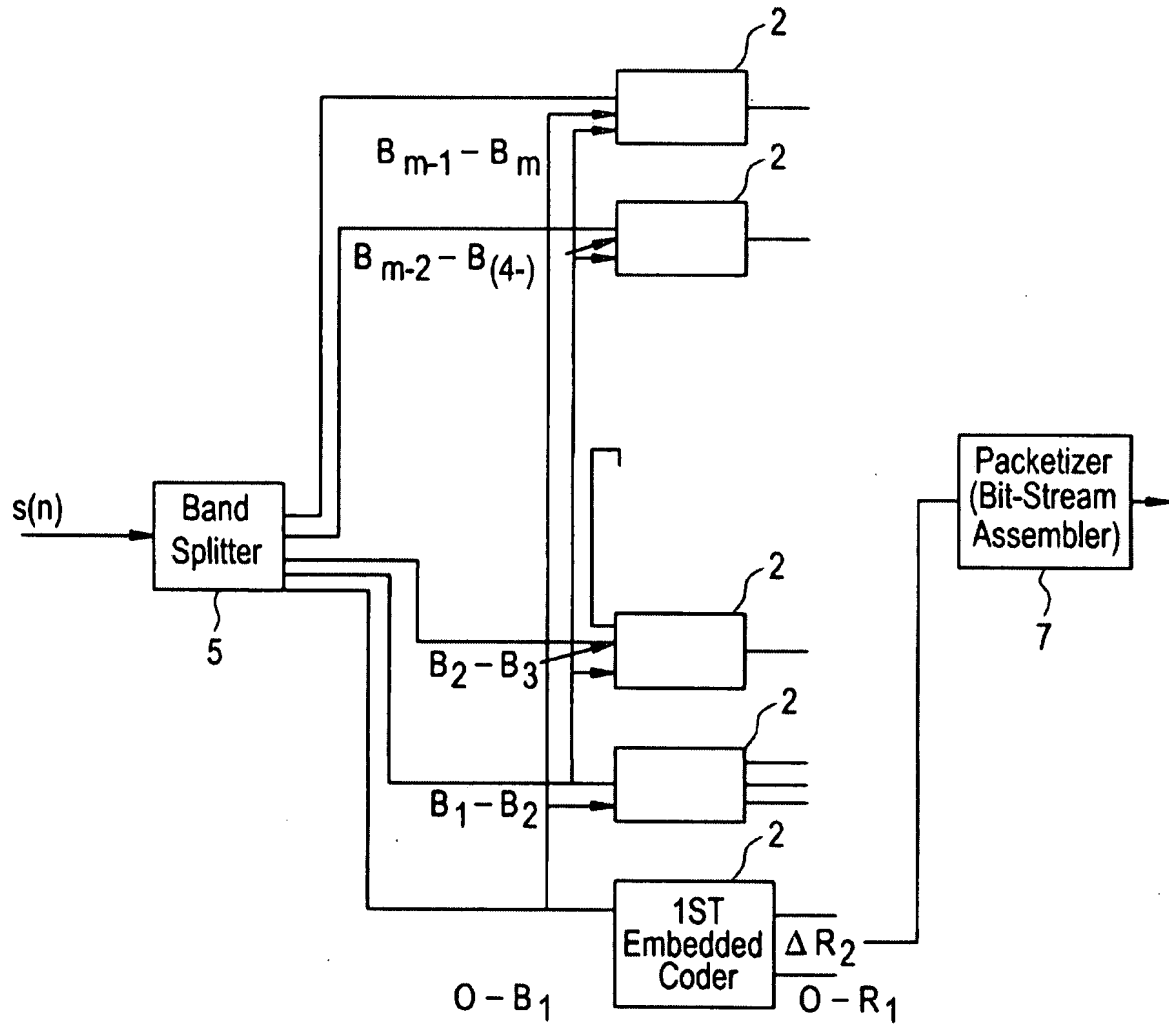


FIG. 1B

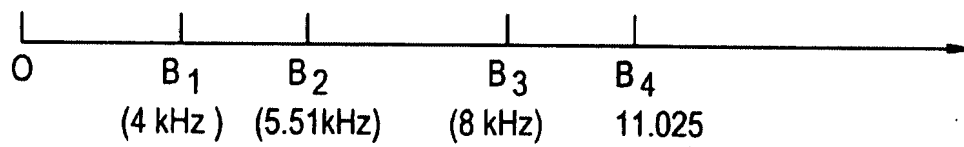
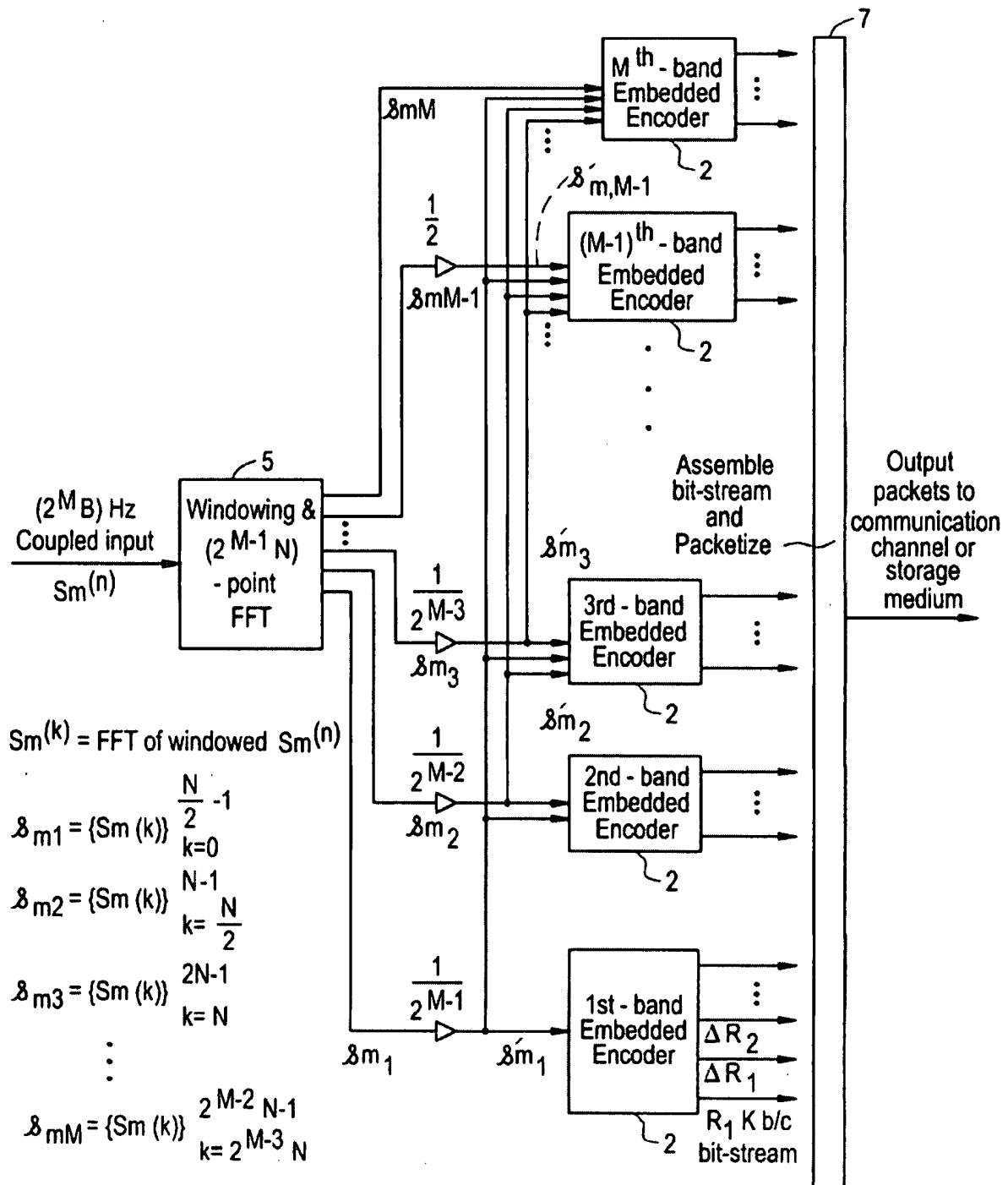
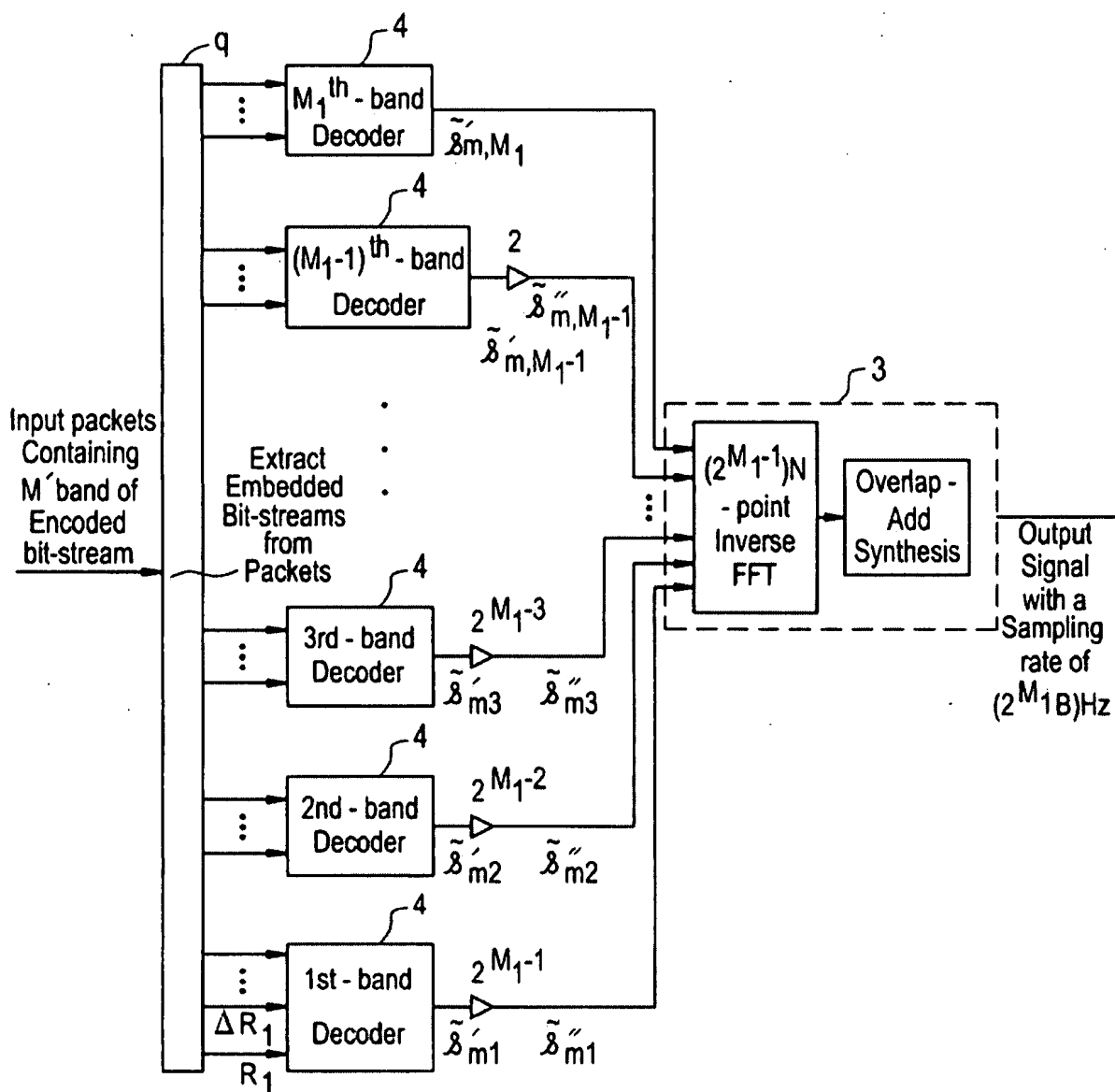


FIG. 2A



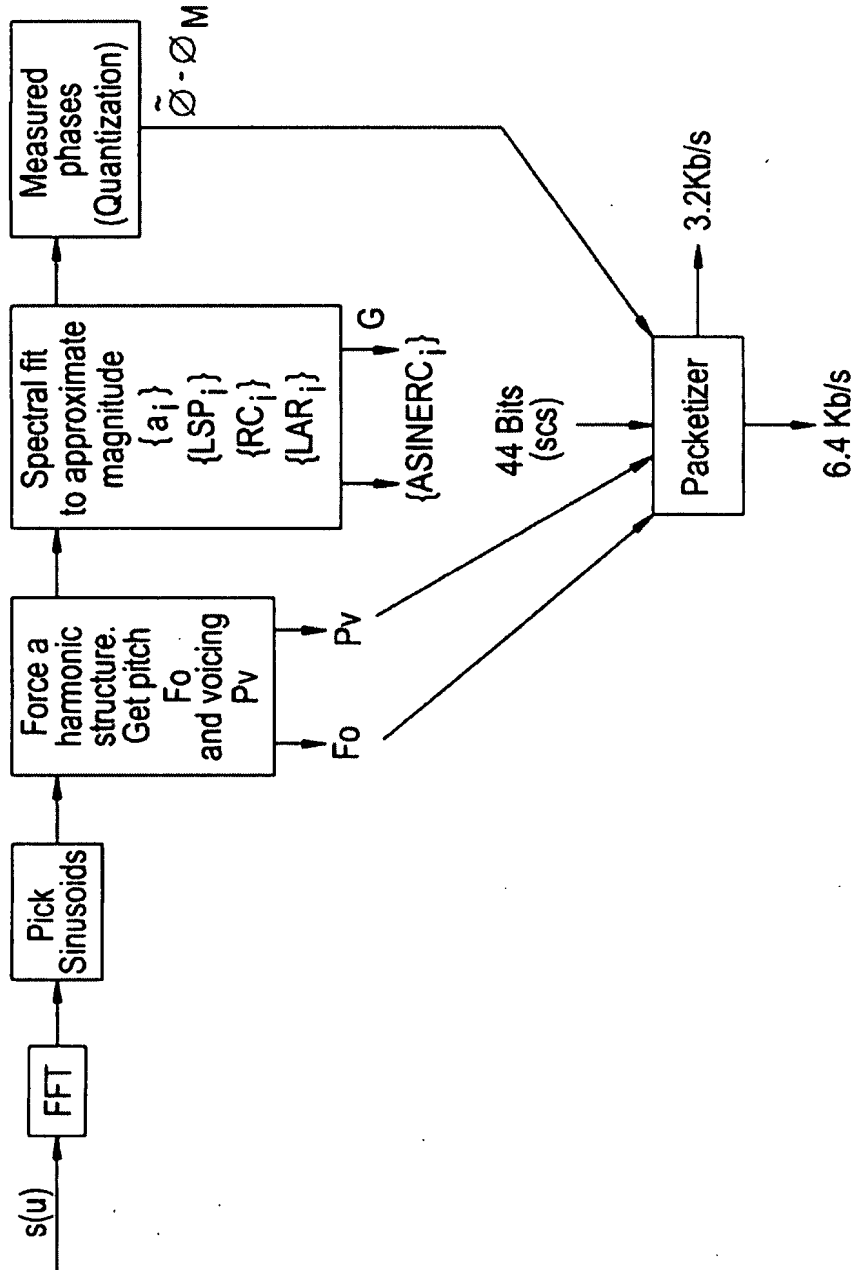
3/46

FIG. 2B



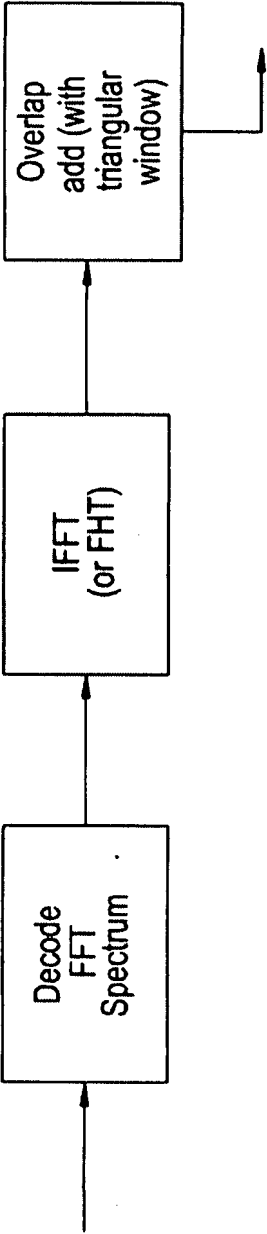
4/46

FIG. 3A



5/46

FIG. 3B



Decoder: Synthesis every M ms.

FIG. 4A

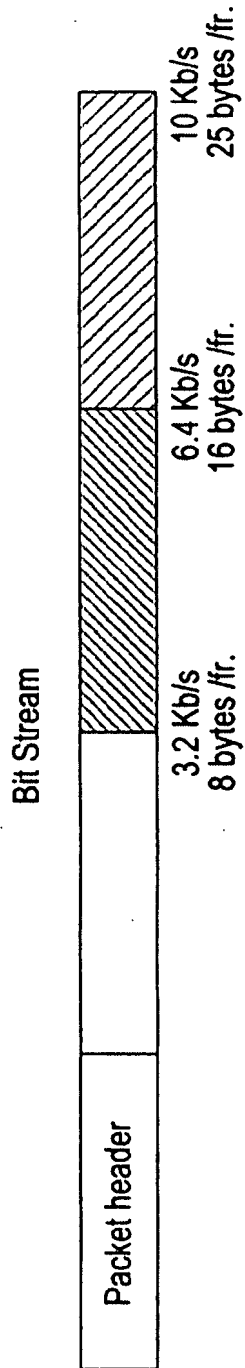
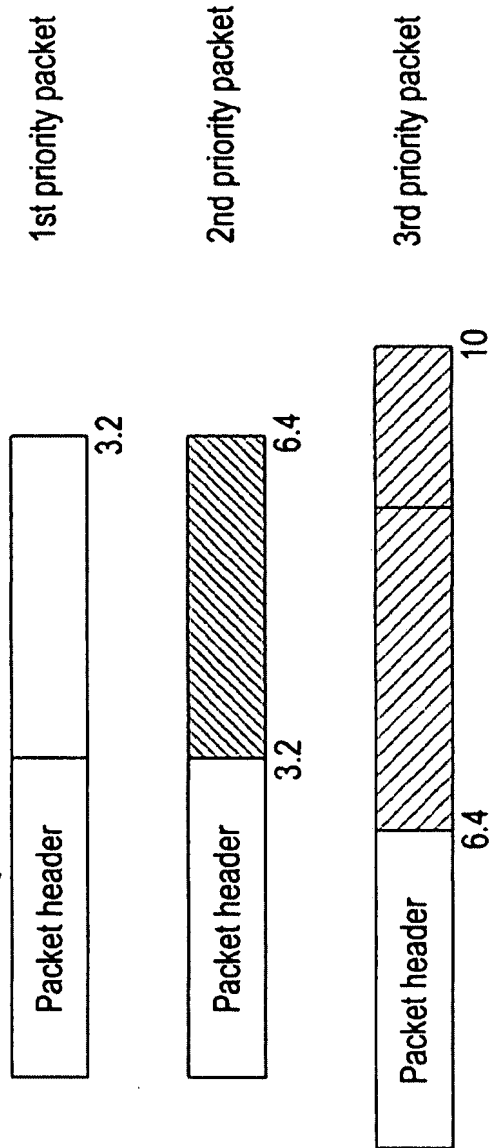
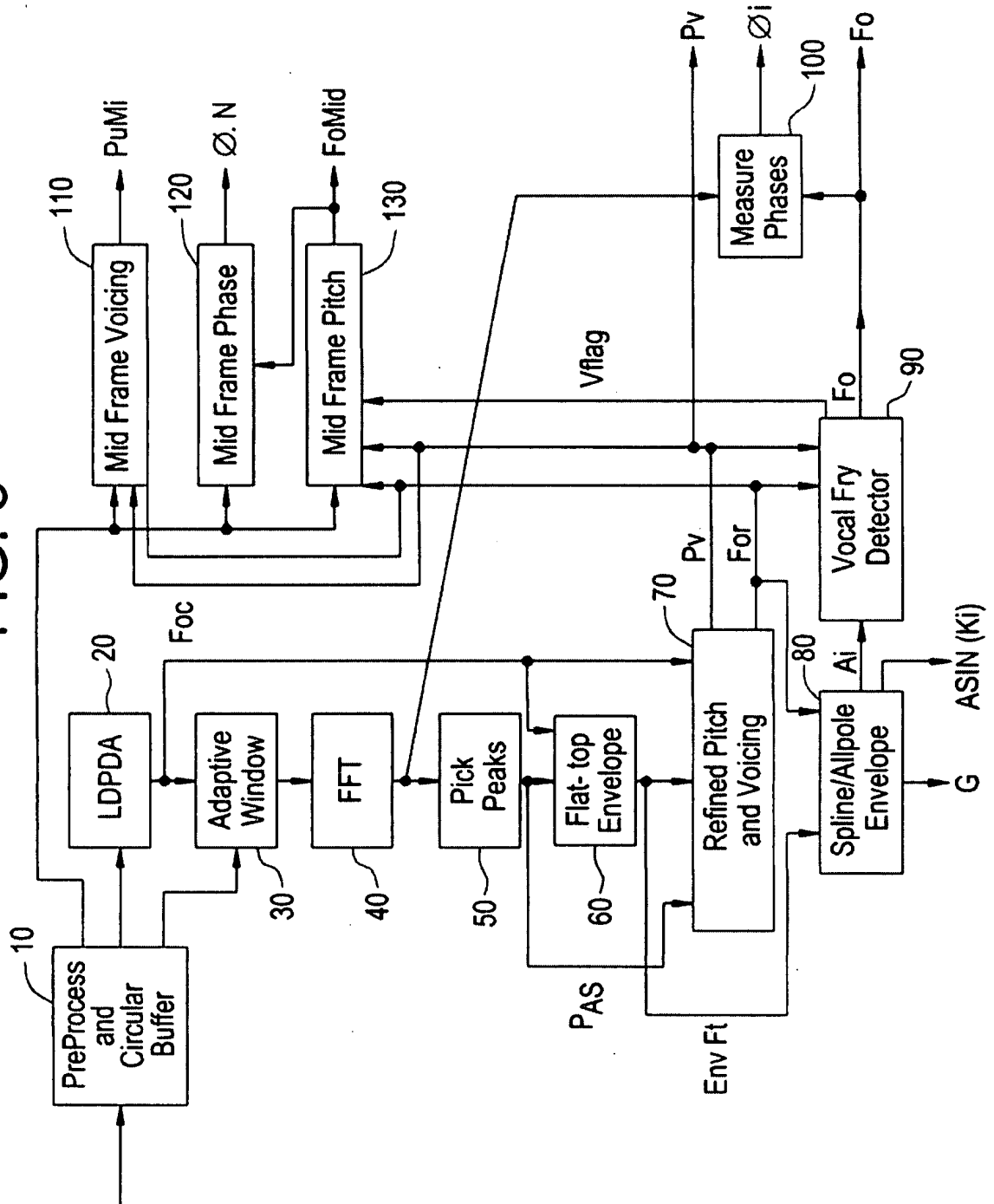


FIG. 4B



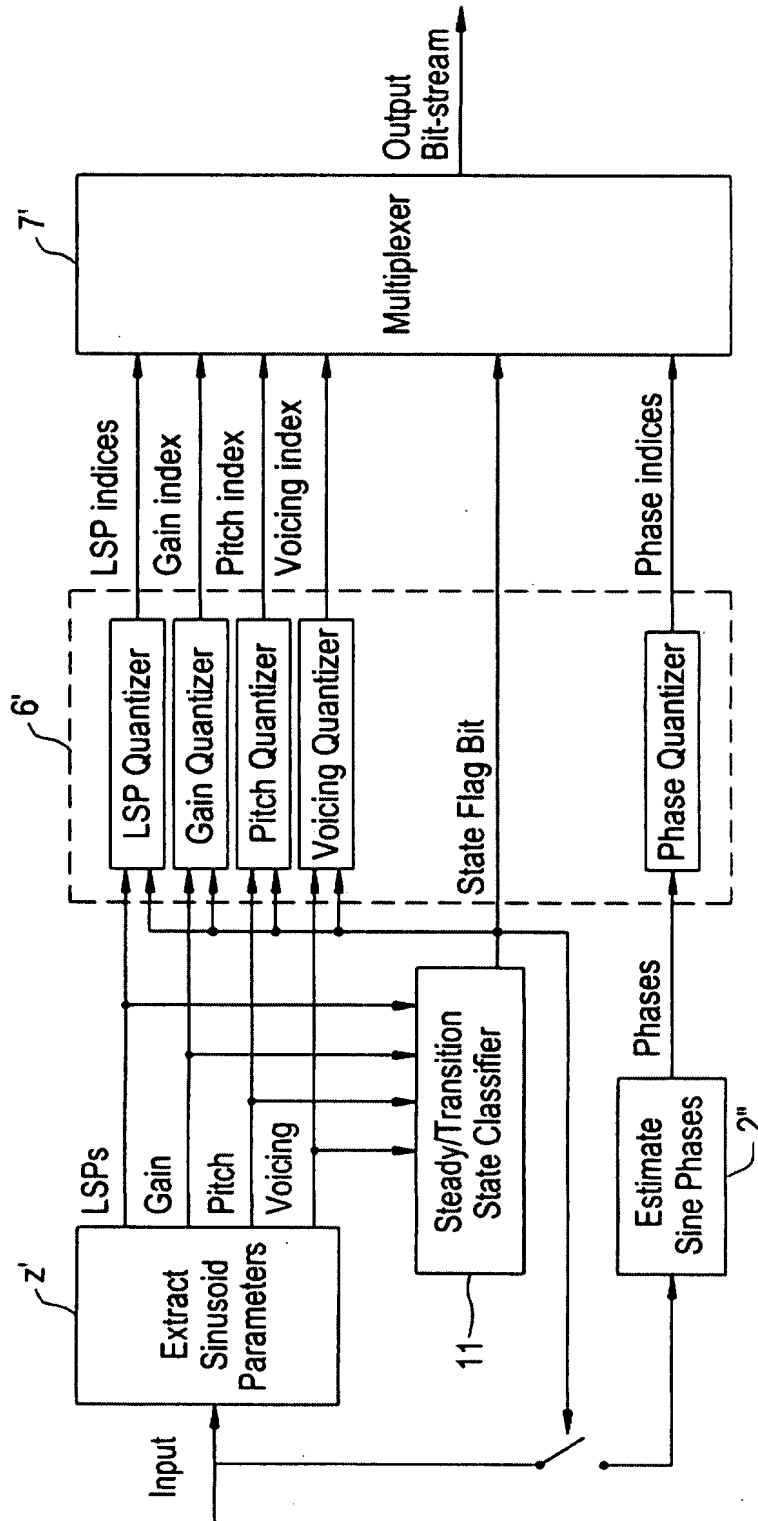
7/46

FIG. 5



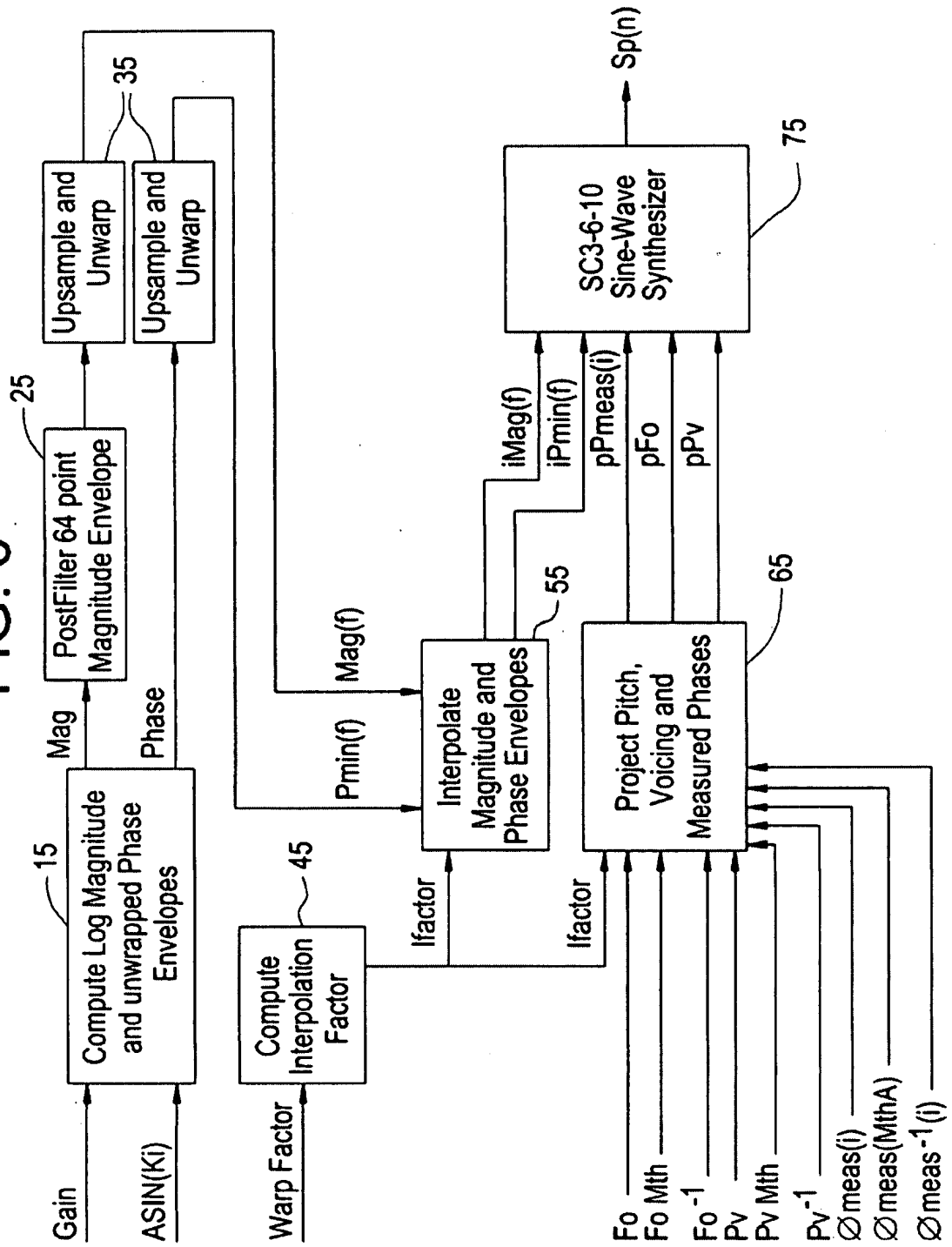
8/46

FIG. 5A



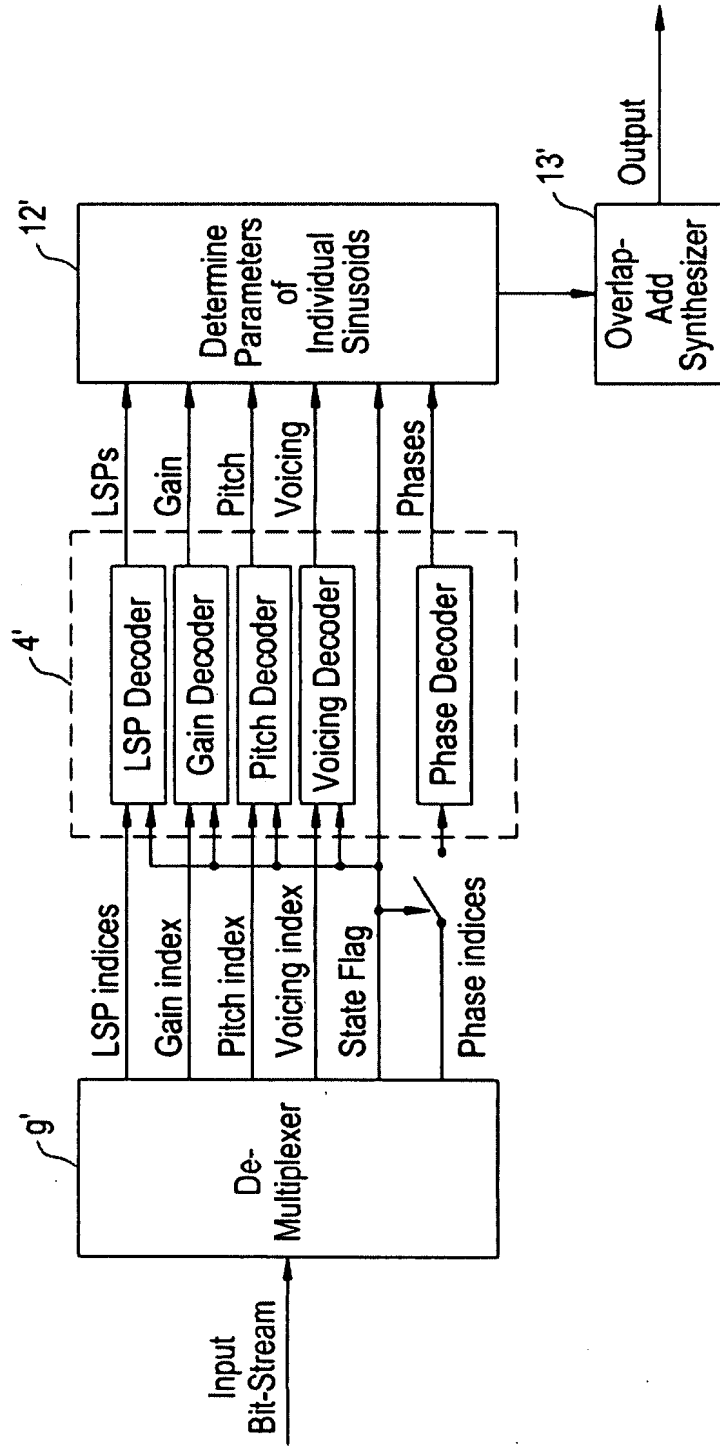
9/46

FIG. 6



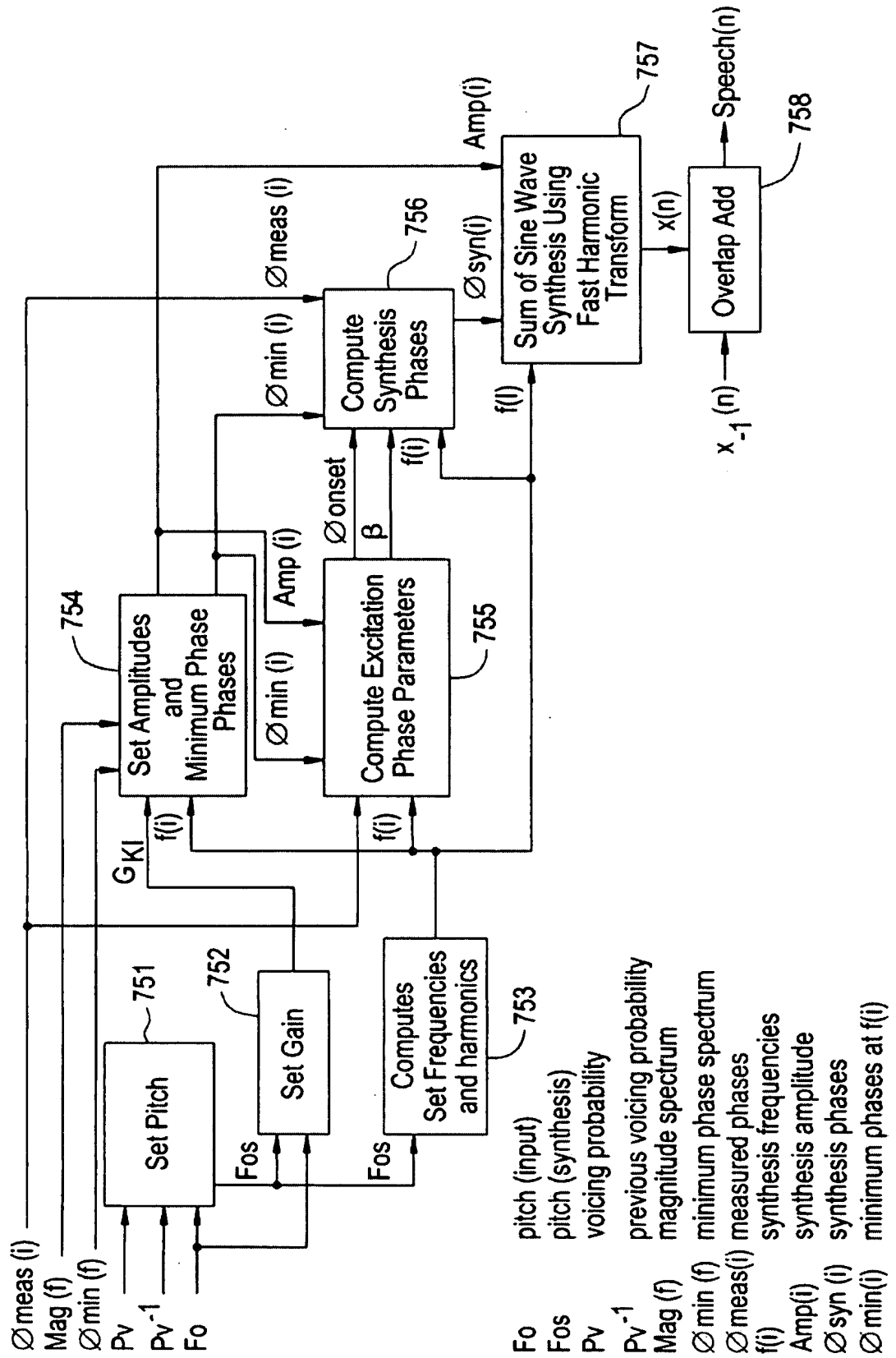
10/46

FIG. 6A



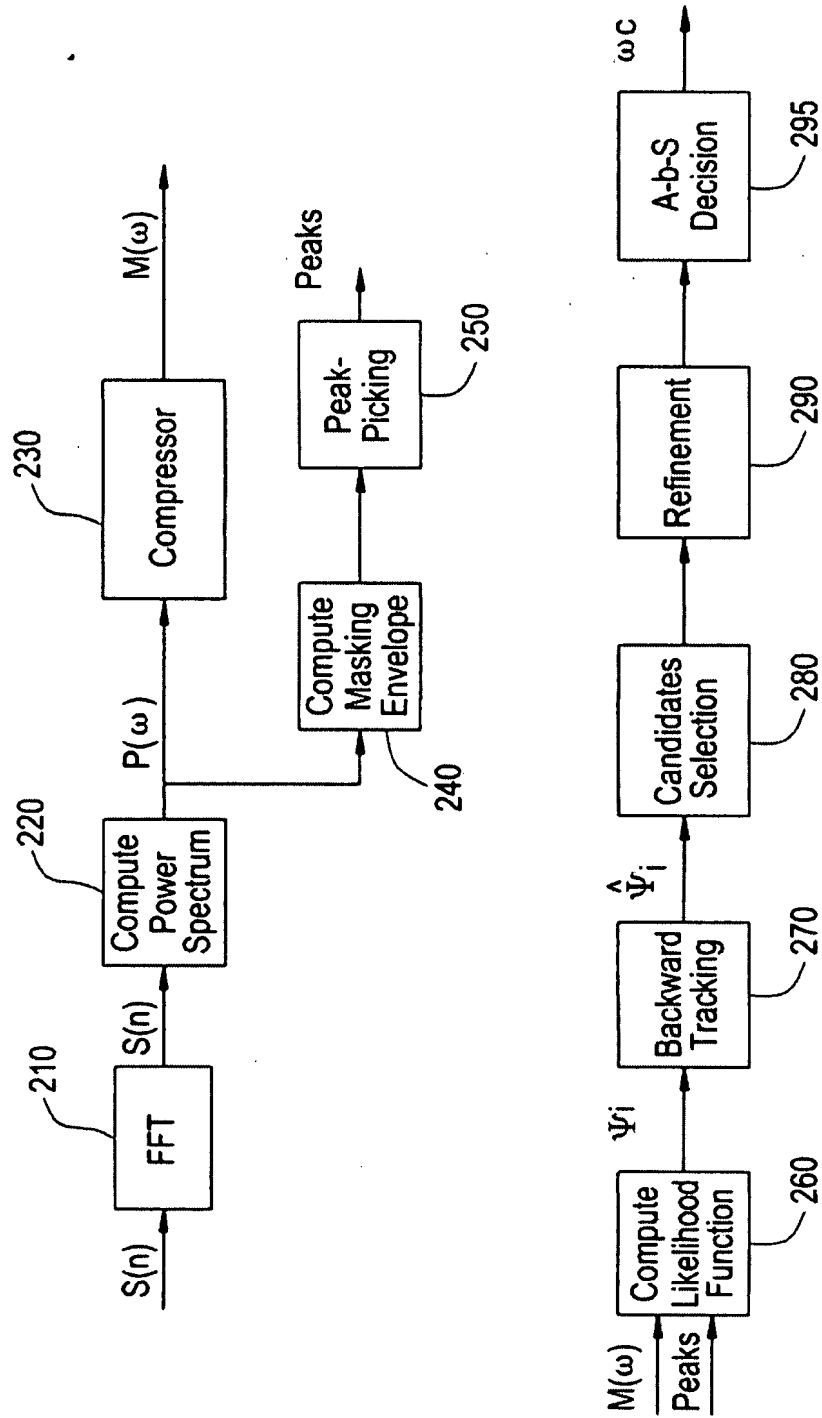
11/46

FIG. 7



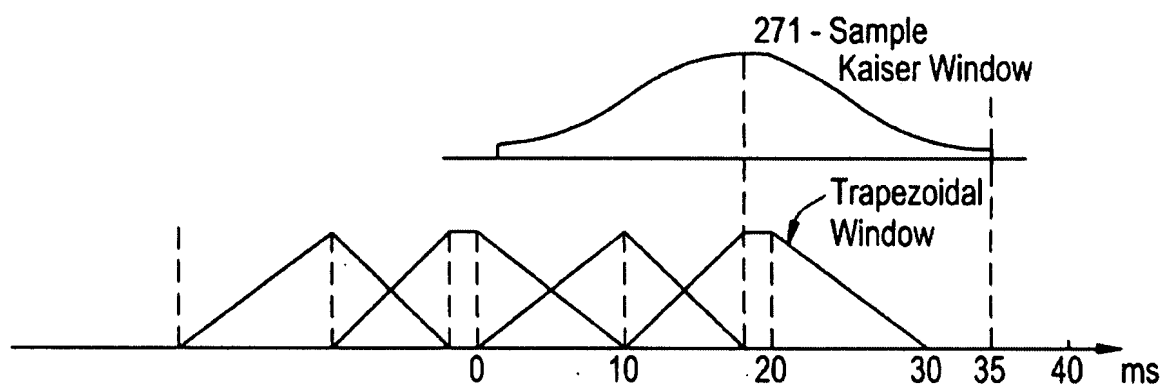
12/46

FIG. 8



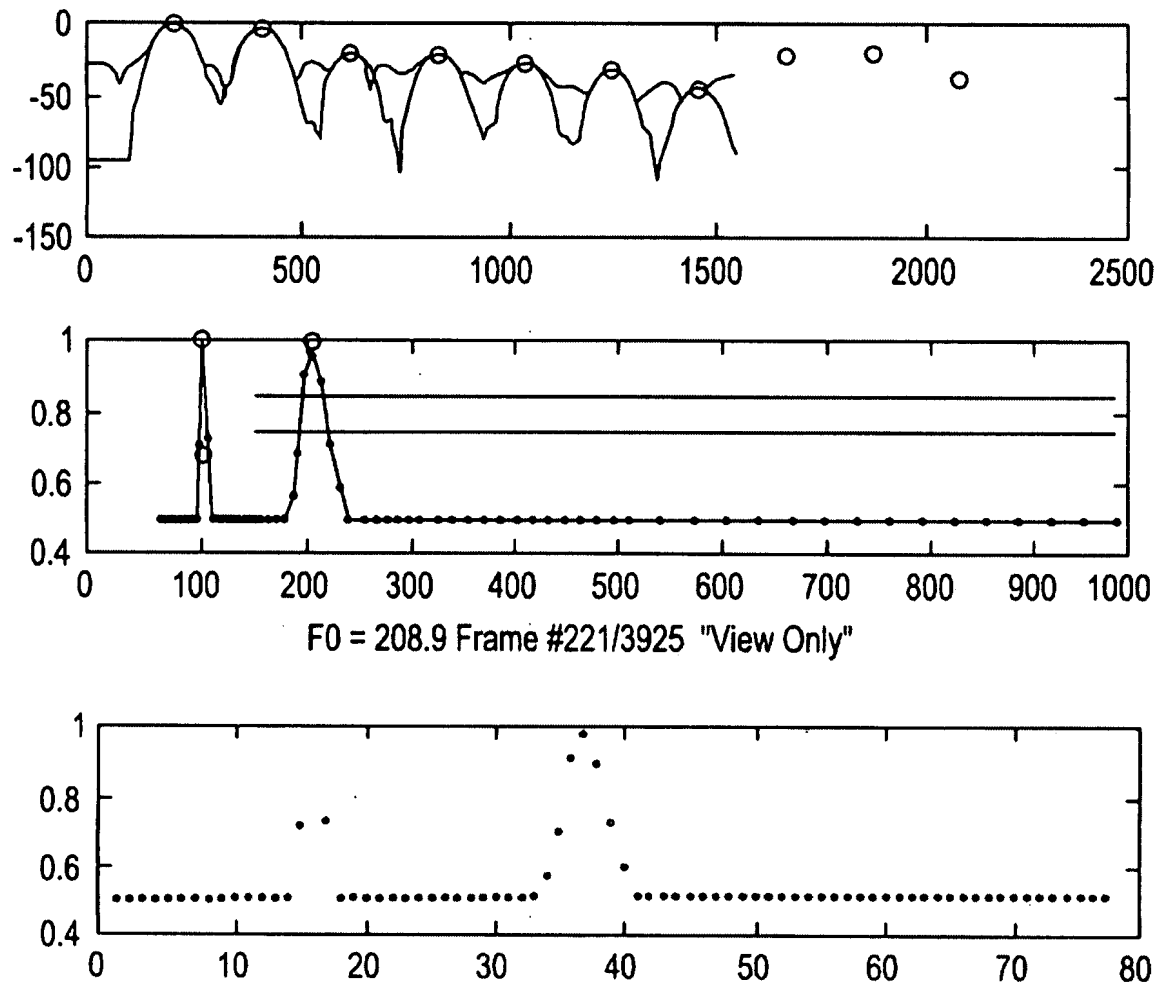
13/46

FIG. 8A



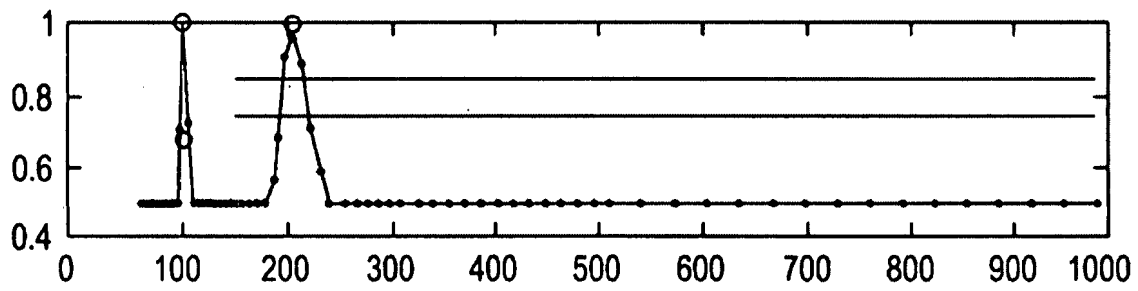
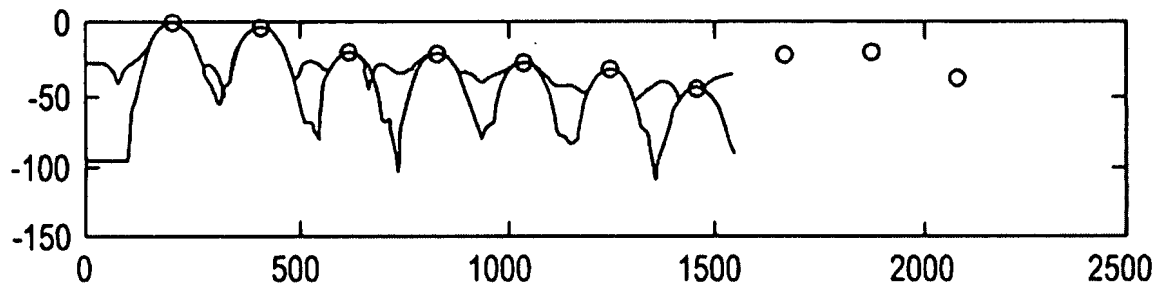
14/46

FIG. 9A

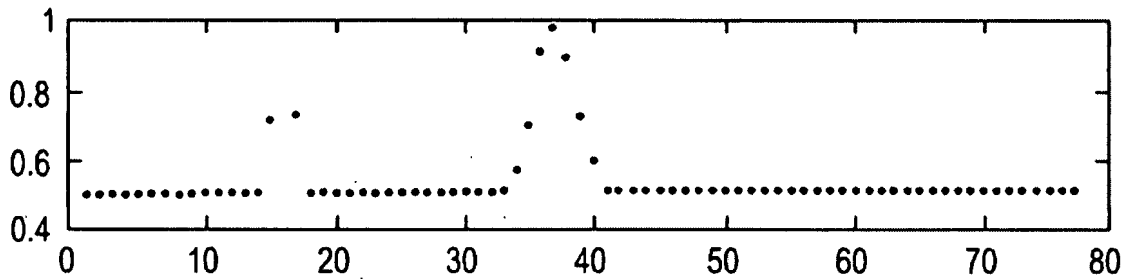


15/46

FIG. 9B



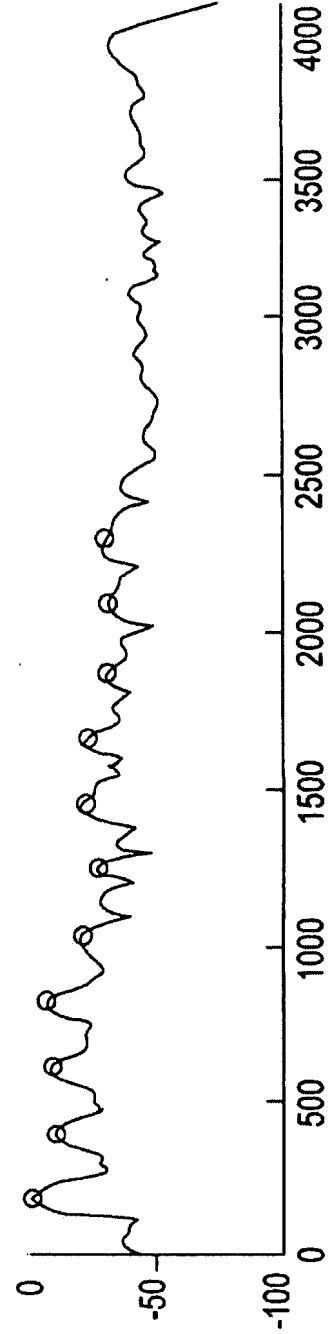
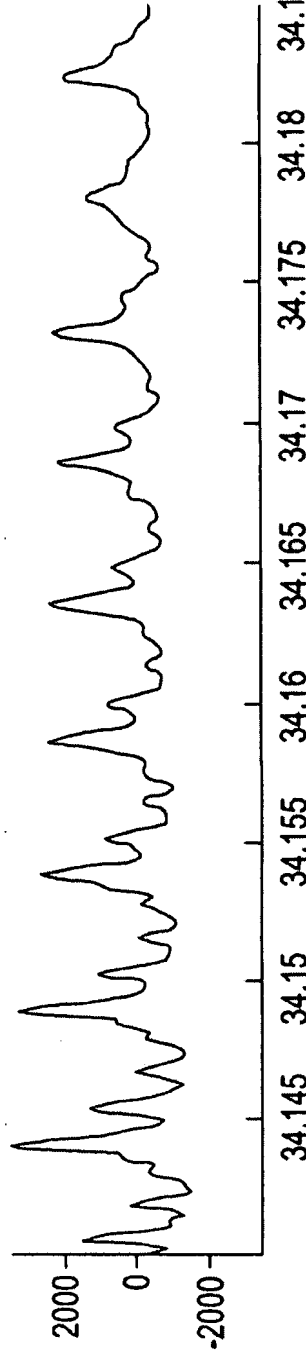
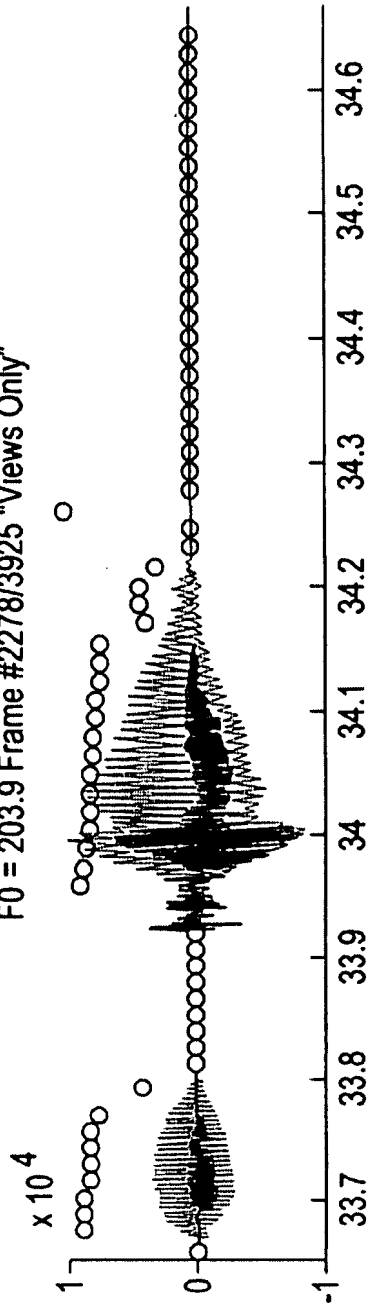
F0 = 208.9 Frame #221/3925 *View Only*



16/46

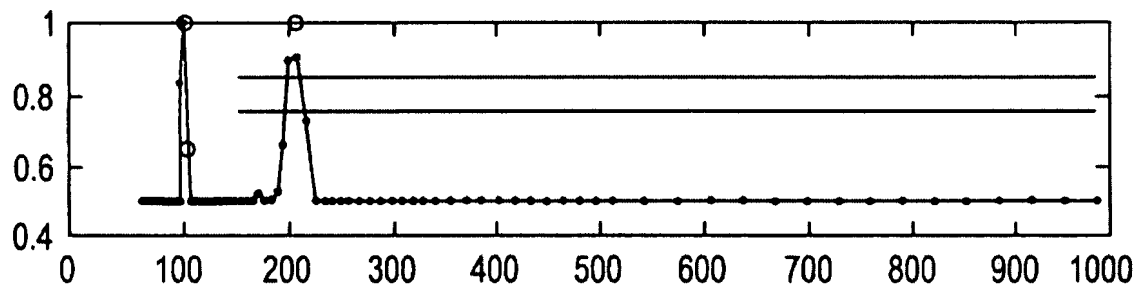
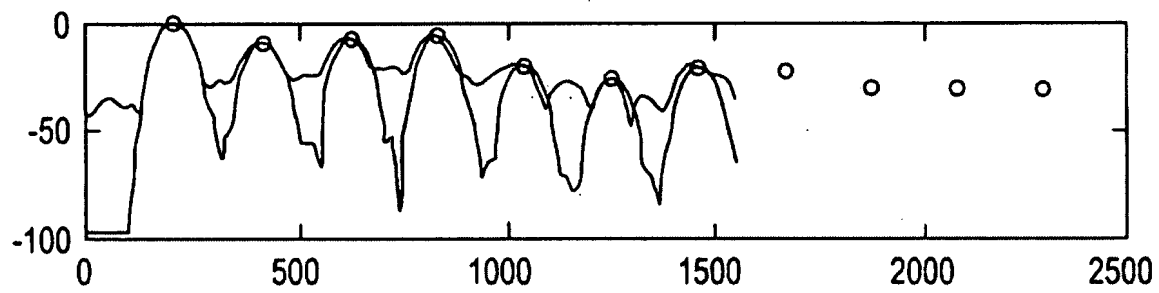
FIG. 9C

F0 = 203.9 Frame #2278/3925 "Views Only"

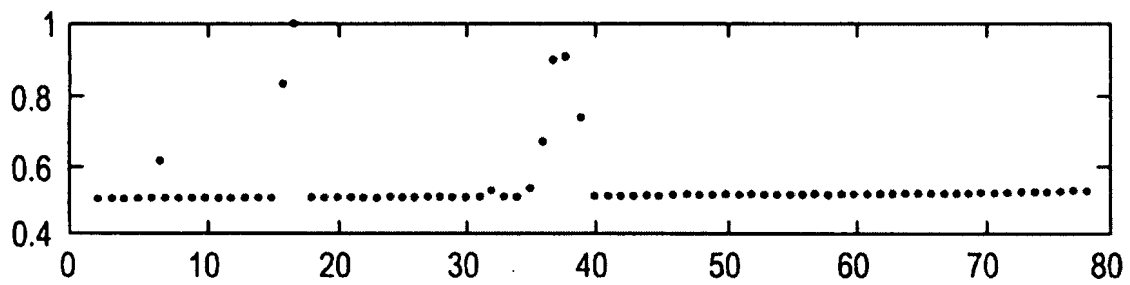


17/46

FIG. 9D

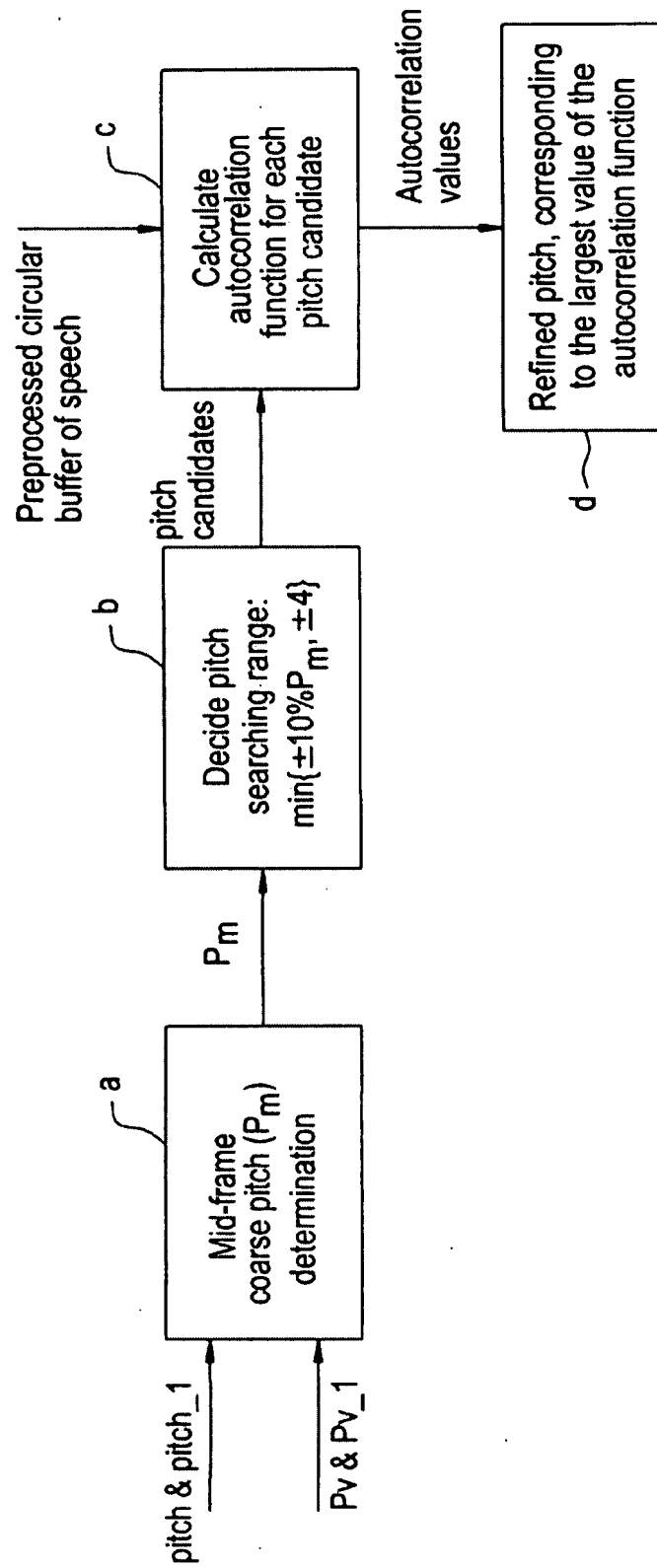


F0 = 208.9 Frame #2278/3925 *View Only*



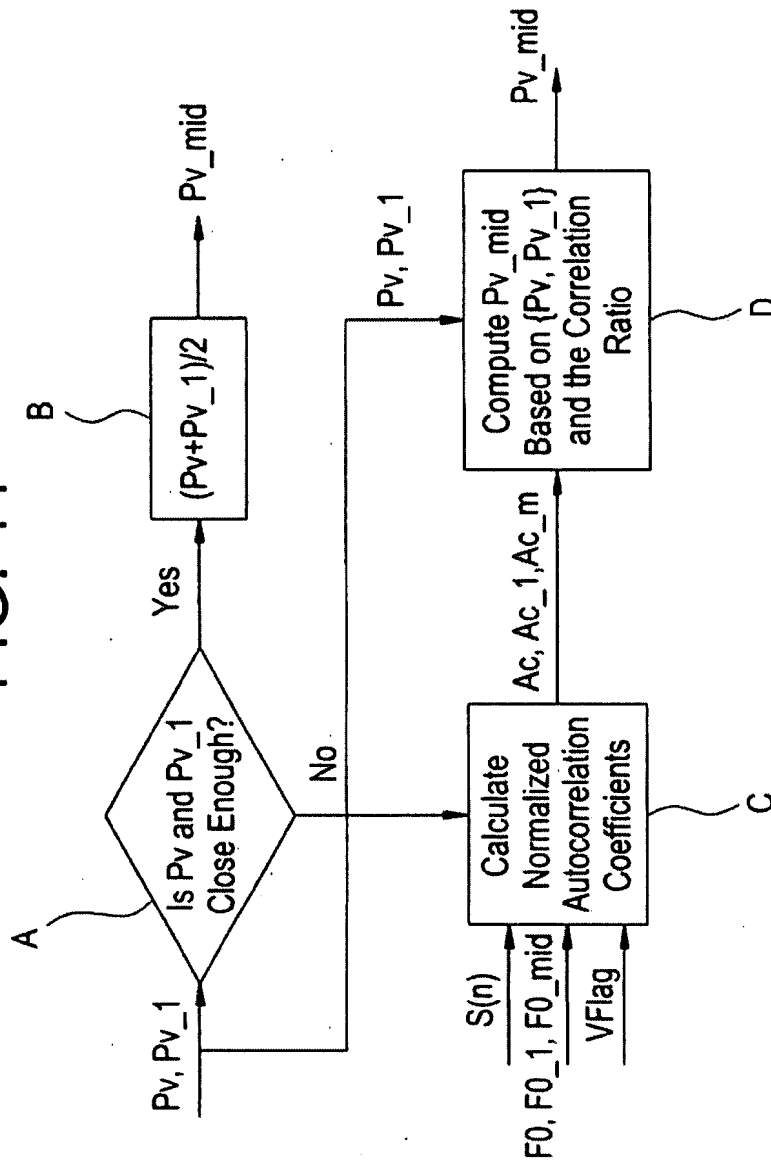
18/46

FIG. 10



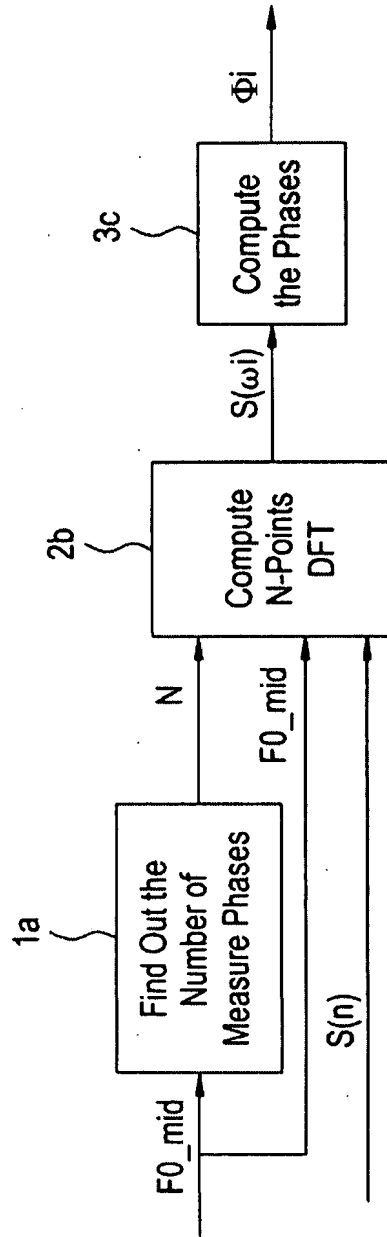
19/46

FIG. 11



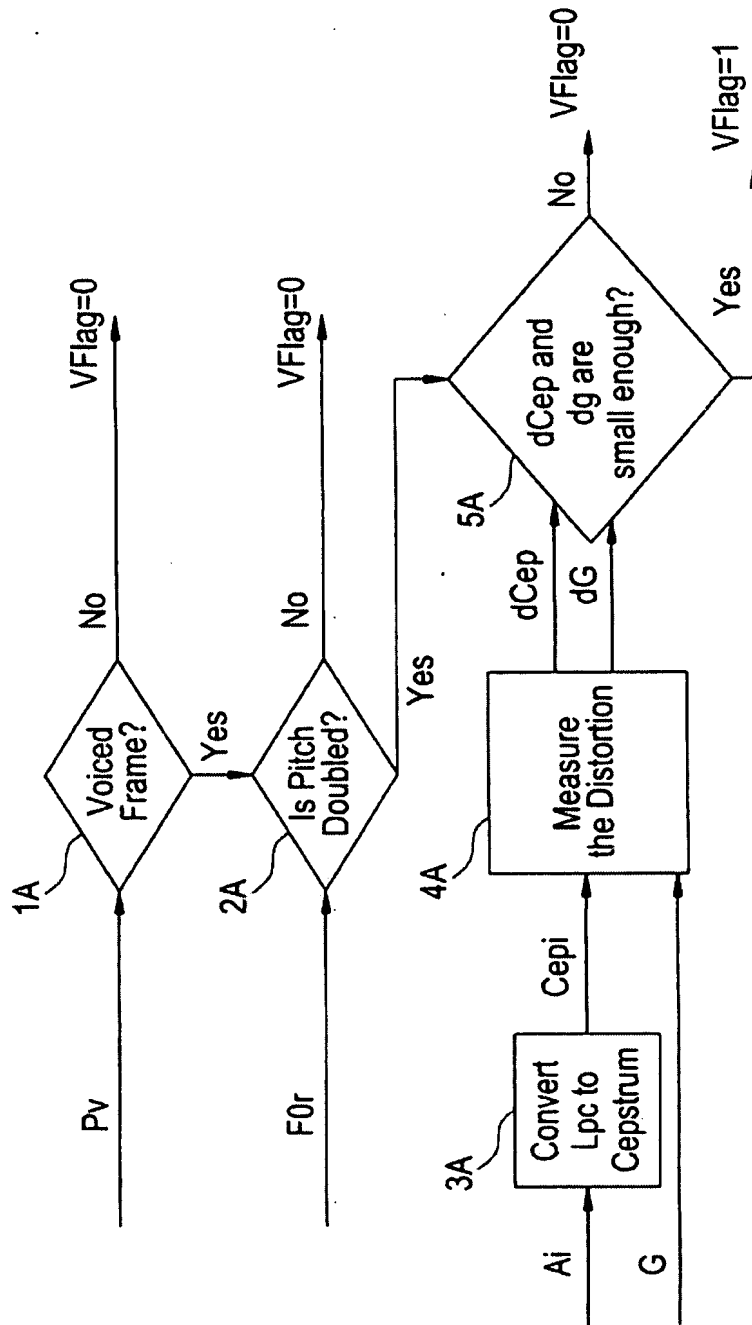
20/46

FIG. 12



21/46

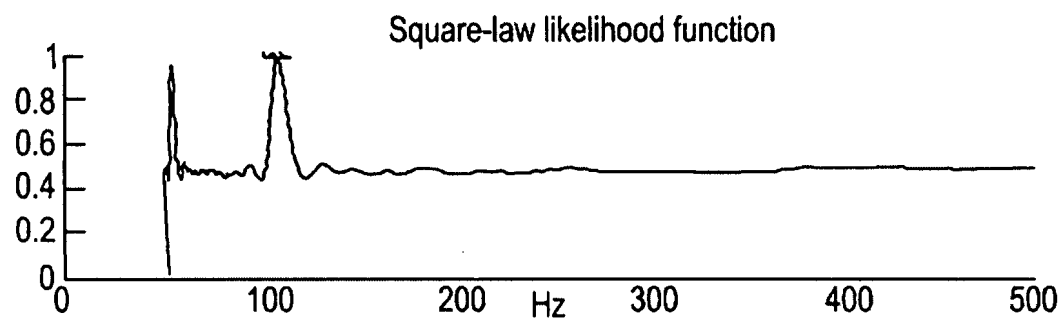
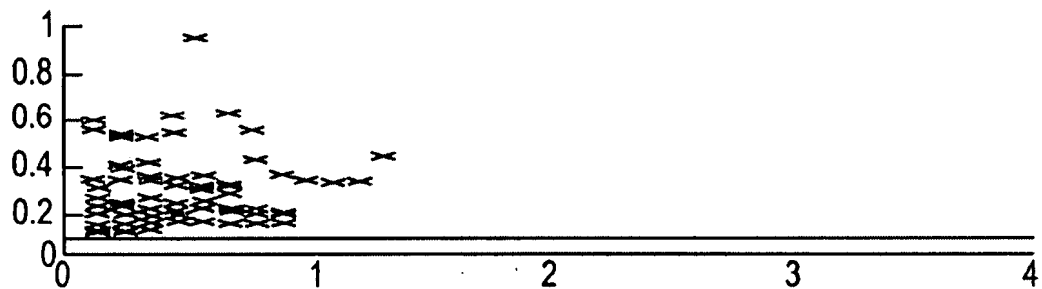
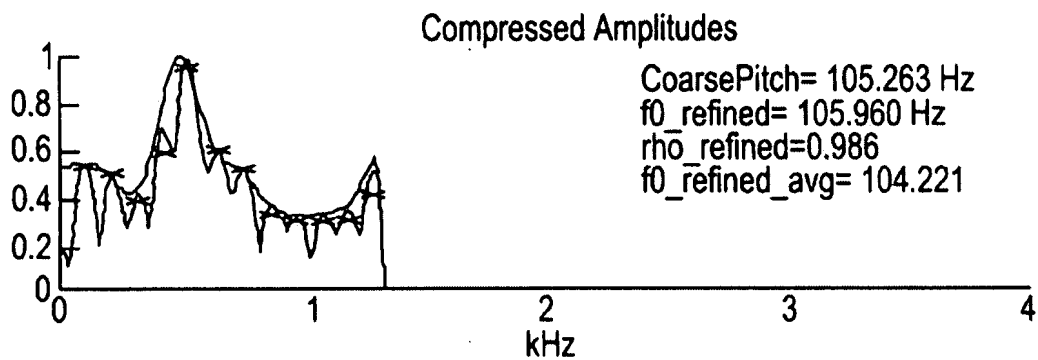
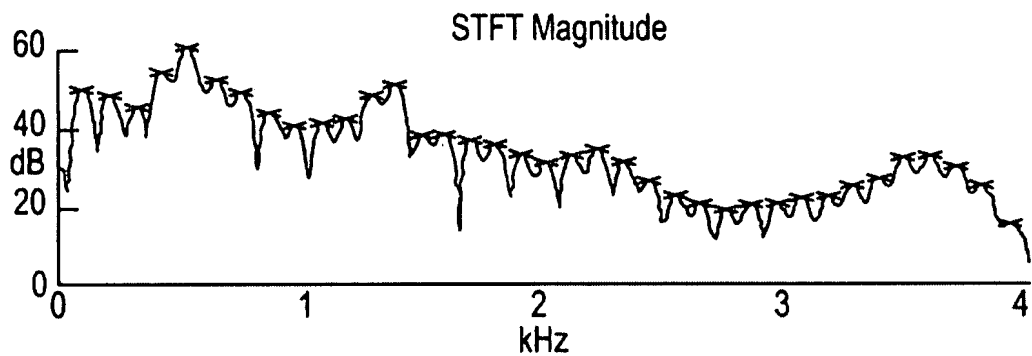
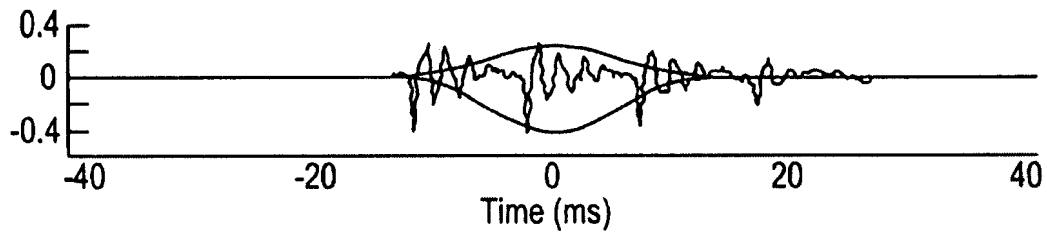
FIG. 13



22/46

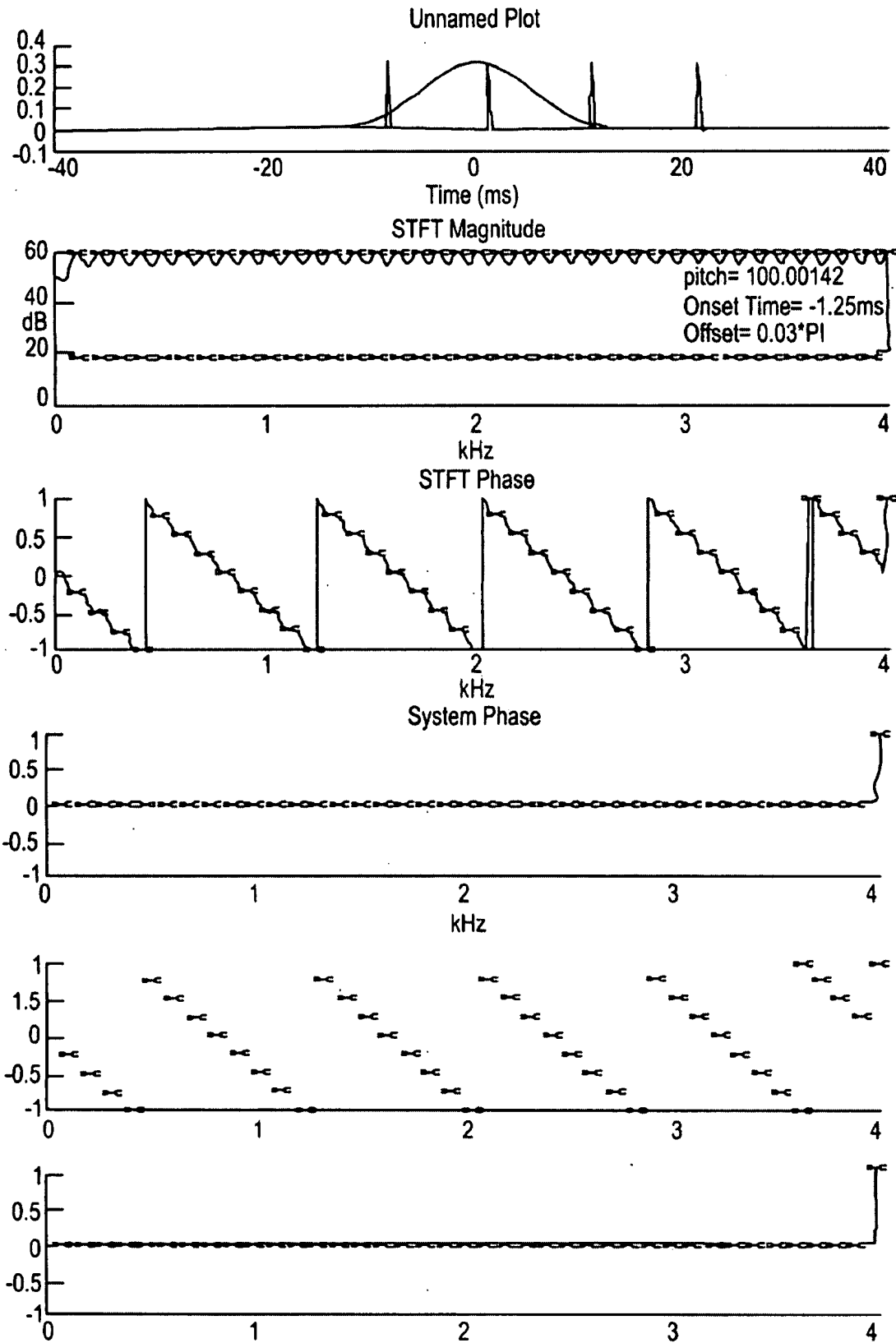
FIG. 14

Unnamed Plot



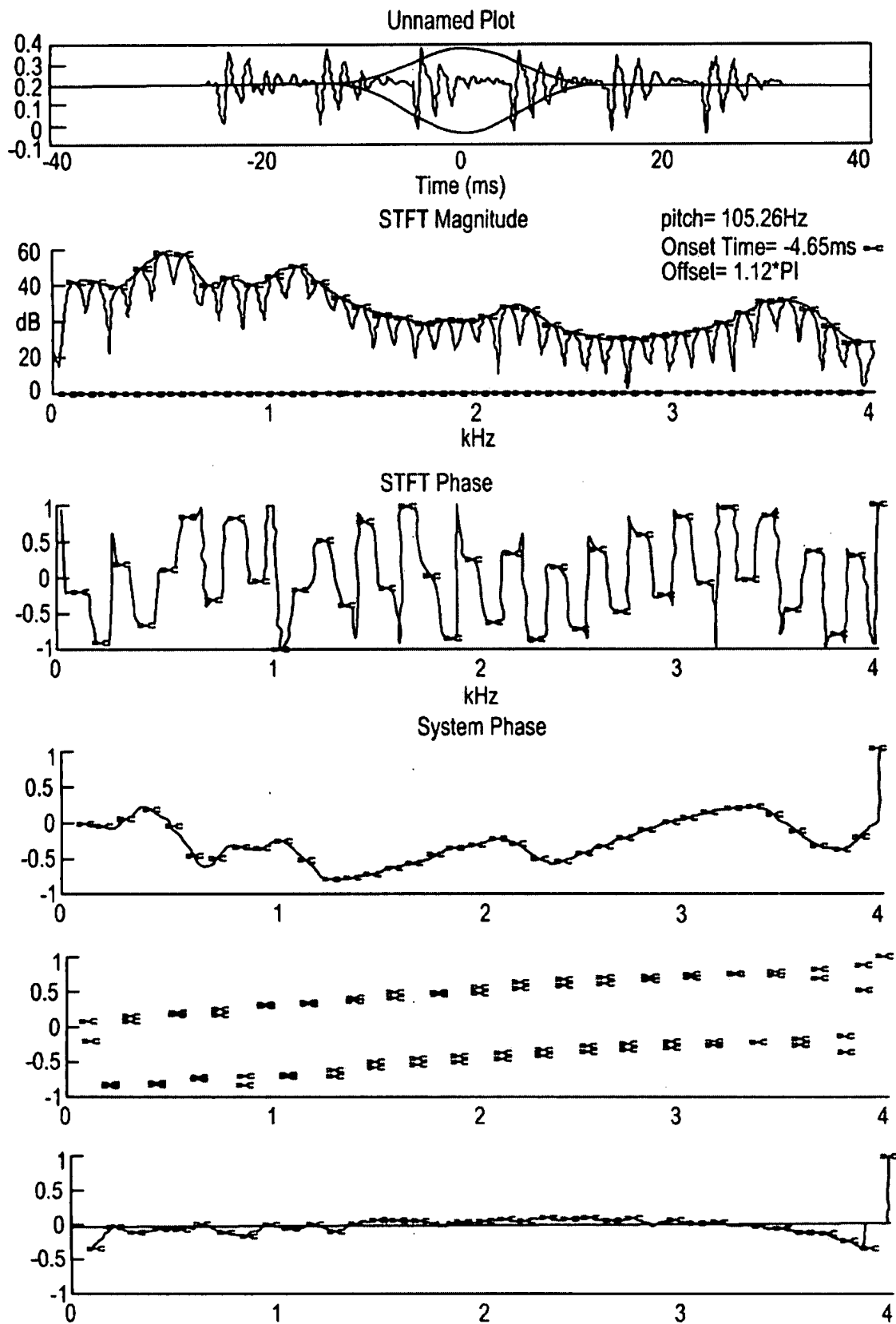
23/46

FIG. 15



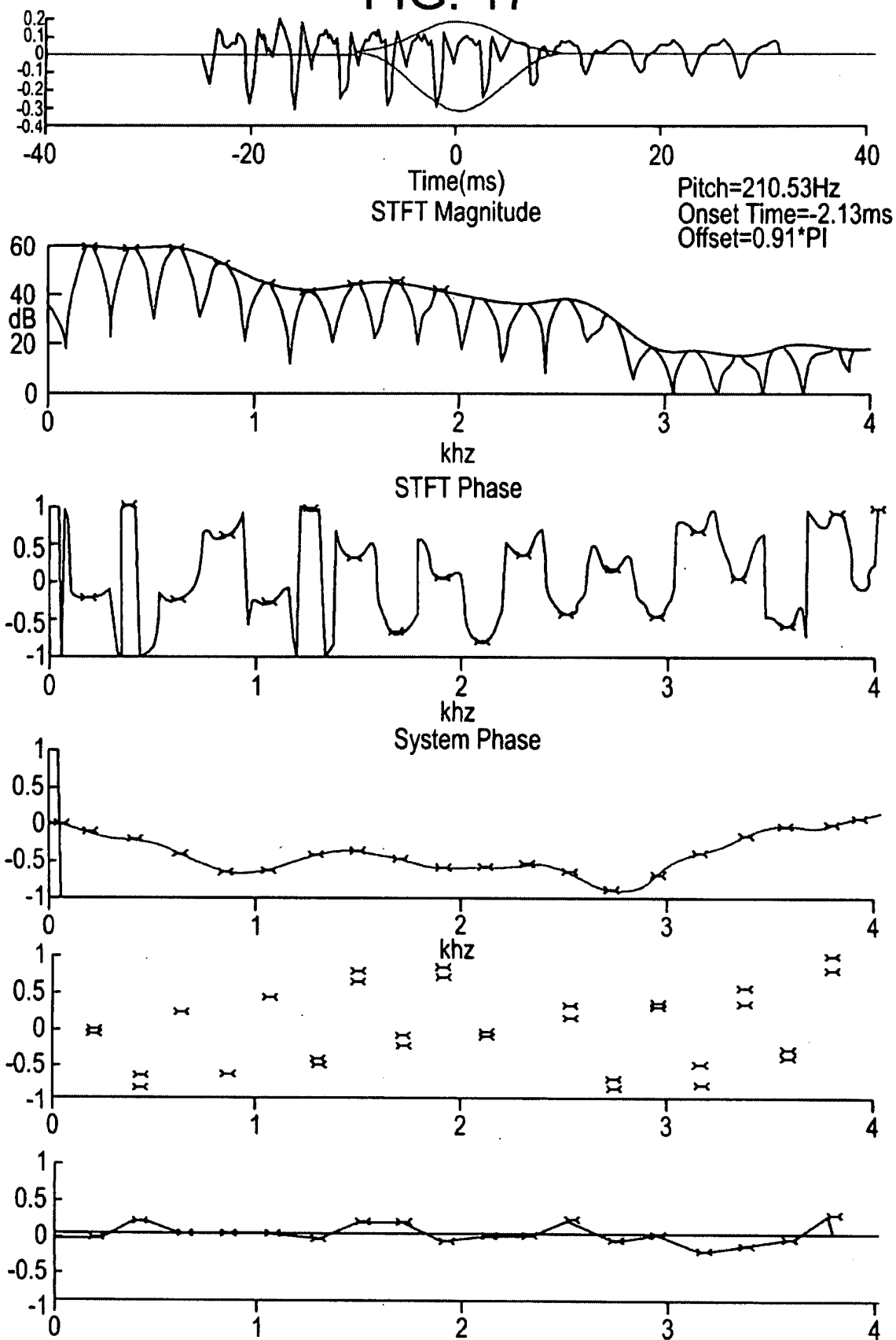
24/46

FIG. 16



25/46

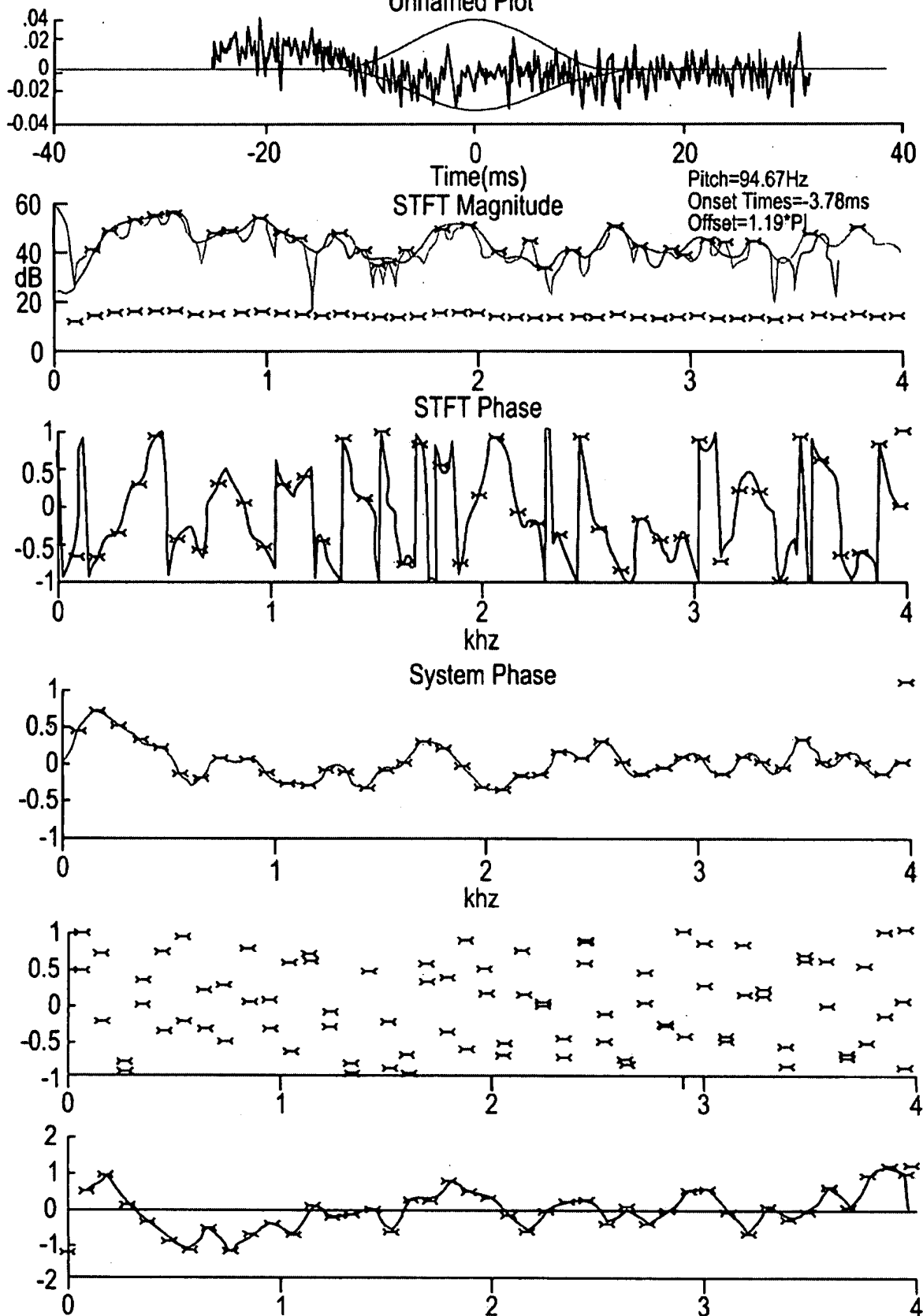
FIG. 17



26/46

FIG. 18

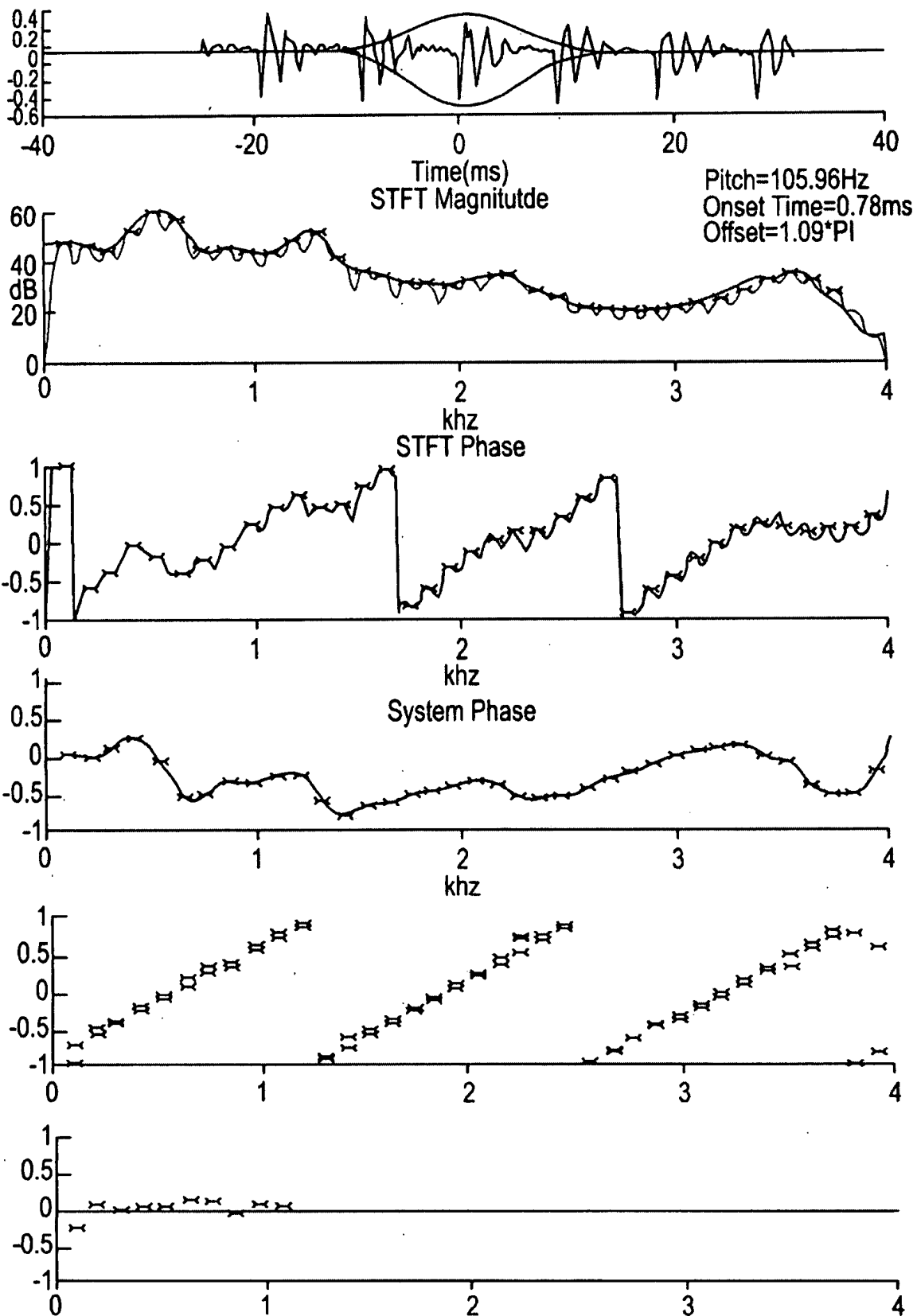
Unnamed Plot



27/46

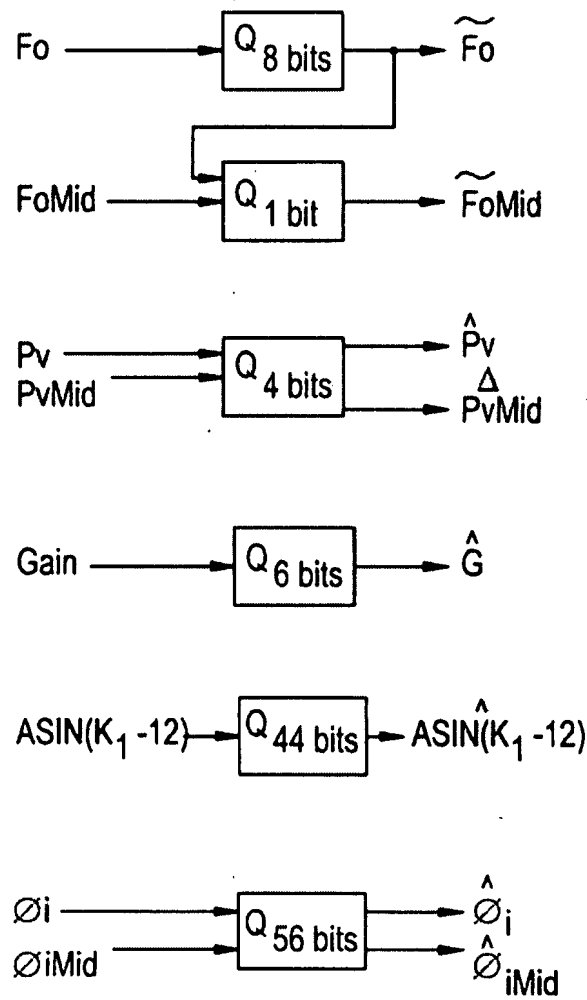
FIG. 19

Unnamed Plot



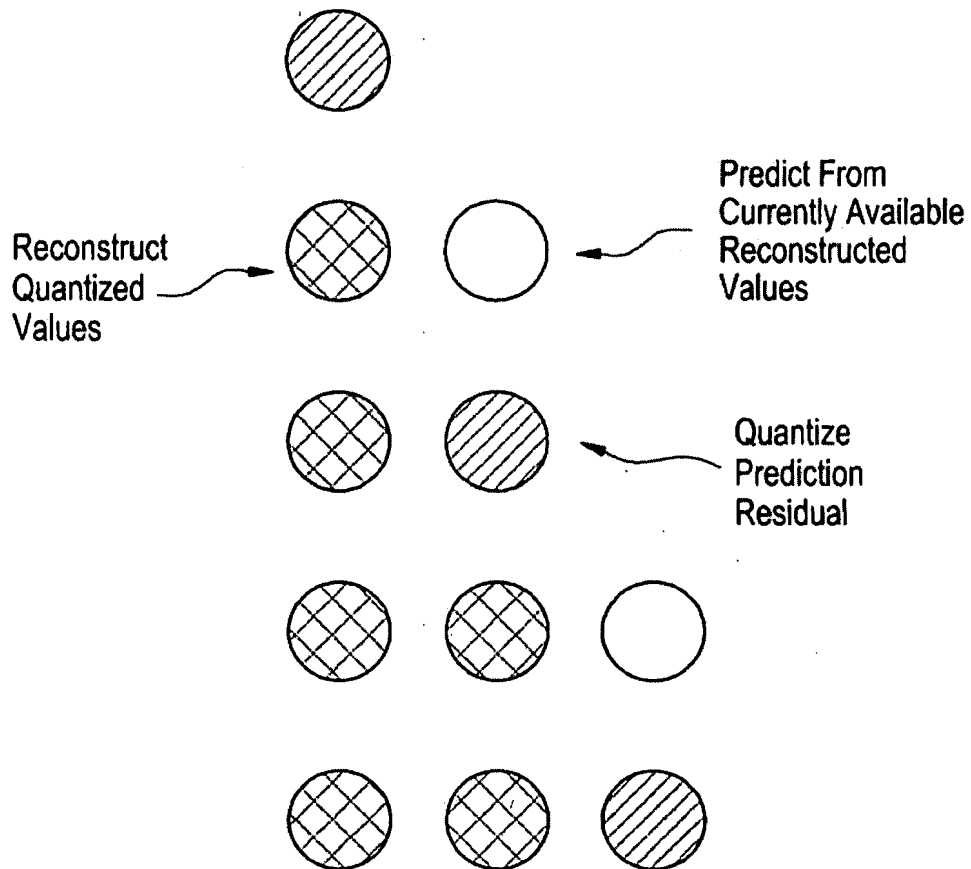
28/46

FIG. 20



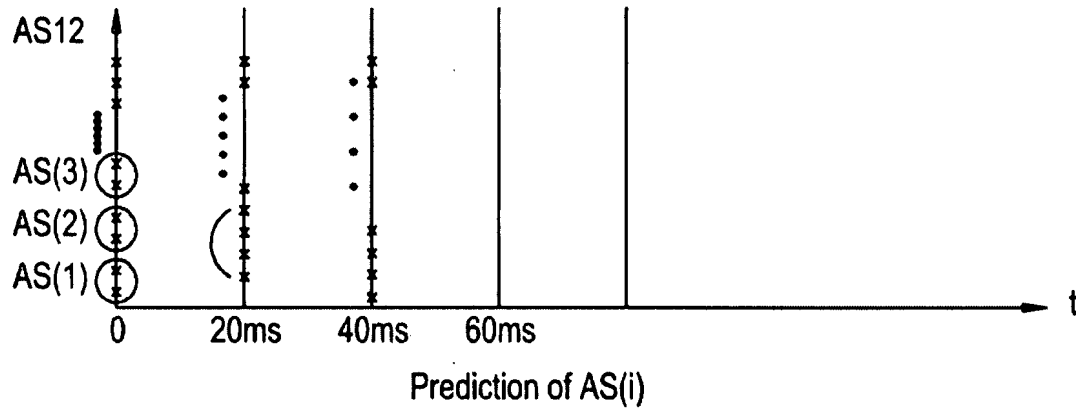
29/46

FIG. 21



30/46

FIG. 21A

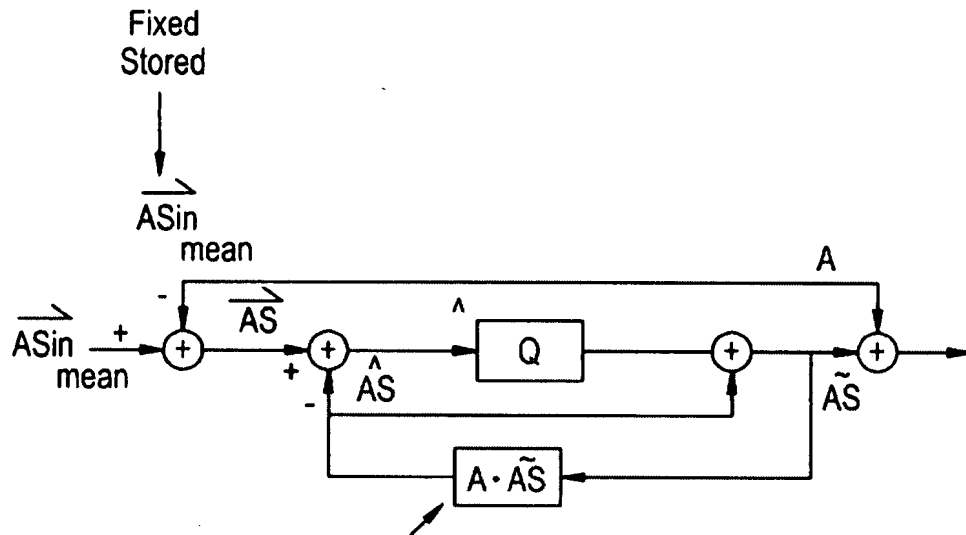


$$\hat{AS}(i) = \sum_{j=1}^{i-1} a_{ij} \hat{AS}(j) = \tilde{AS}(j)$$

$$\begin{bmatrix} \hat{AS}(1) \\ \hat{AS}(2) \\ \vdots \\ \hat{AS}(12) \end{bmatrix} = \begin{bmatrix} 0 & 0 & 0 & \dots & 0 \\ a_{21} & 0 & & & \\ a_{31} & a_{32} & & & \\ \vdots & \vdots & & & \\ a_{12,1} & a_{12,2} & \dots & a_{12,11} \end{bmatrix} \begin{bmatrix} \tilde{AS}(1) \\ \tilde{AS}(2) \\ \vdots \\ \tilde{AS}(11) \end{bmatrix}$$

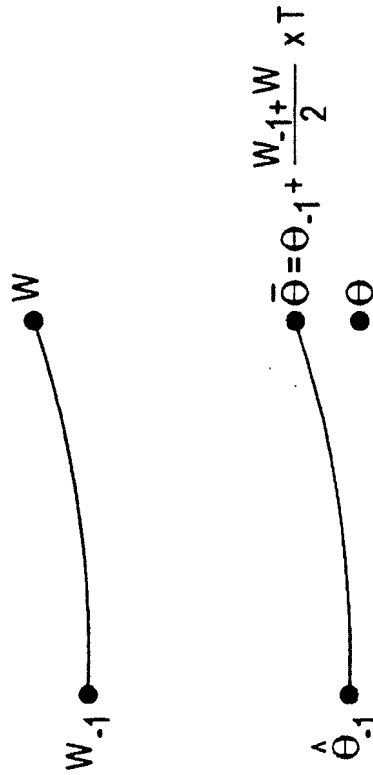
12x1 12x11 1x1

Fixed Store



31/46

FIG. 22A



$$\text{Phase Residual} = \Theta - \bar{\Theta}$$

W_{-1} = Frequency at Previous Frame

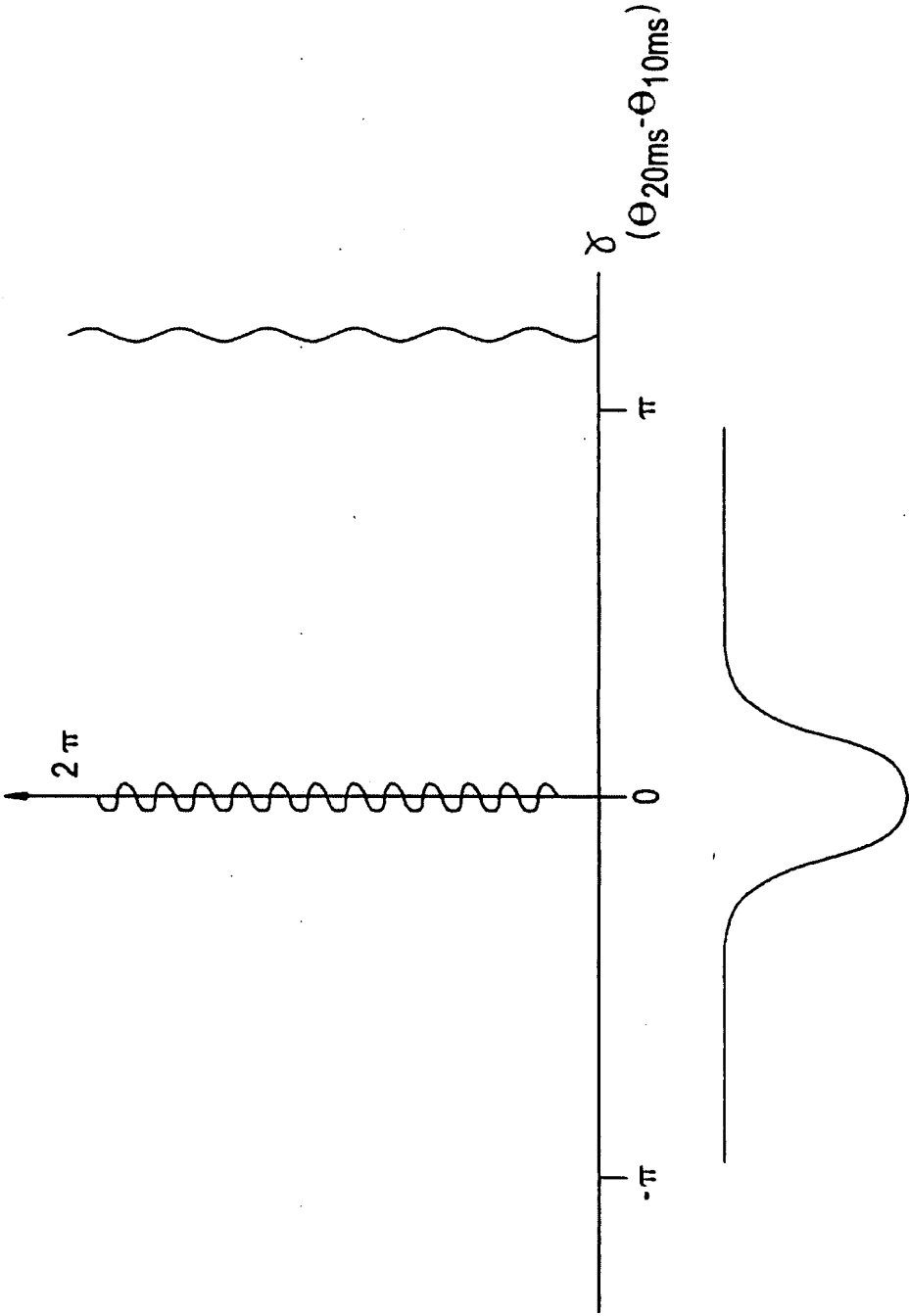
W = Frequency at Current Frame

Θ_{-1} = Quantized Phase at Previous Frame

$\bar{\Theta}$ = Predicted Phase at Current Frame

Θ = Measured Phase at Current Frame

FIG. 22B
Scatter Plot of 20ms Phase and 10ms Phase
Prediction Error



33/46

FIG. 23A

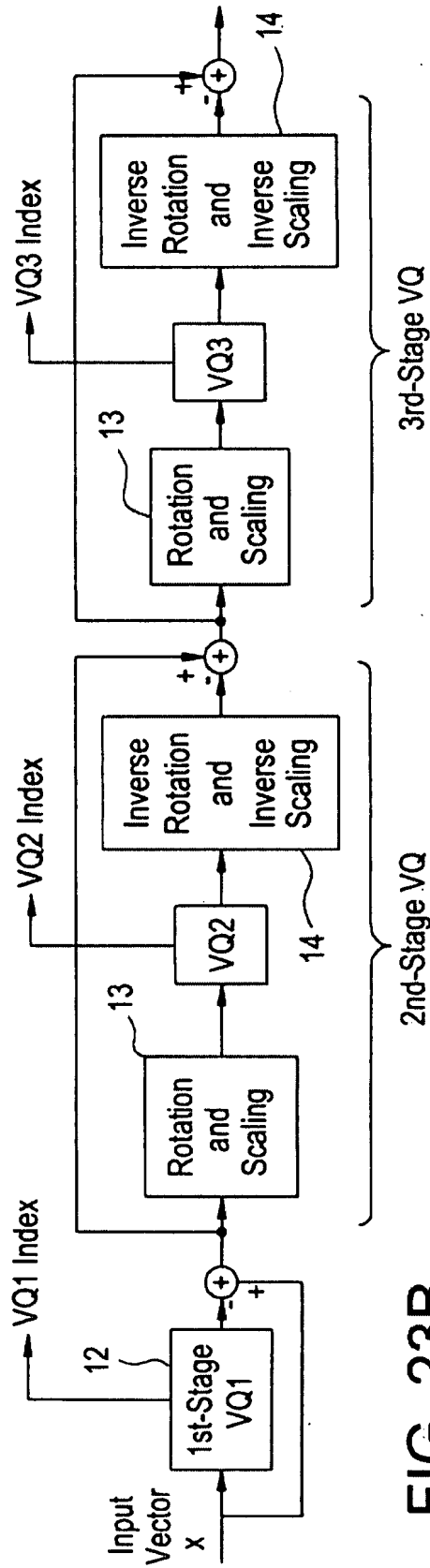
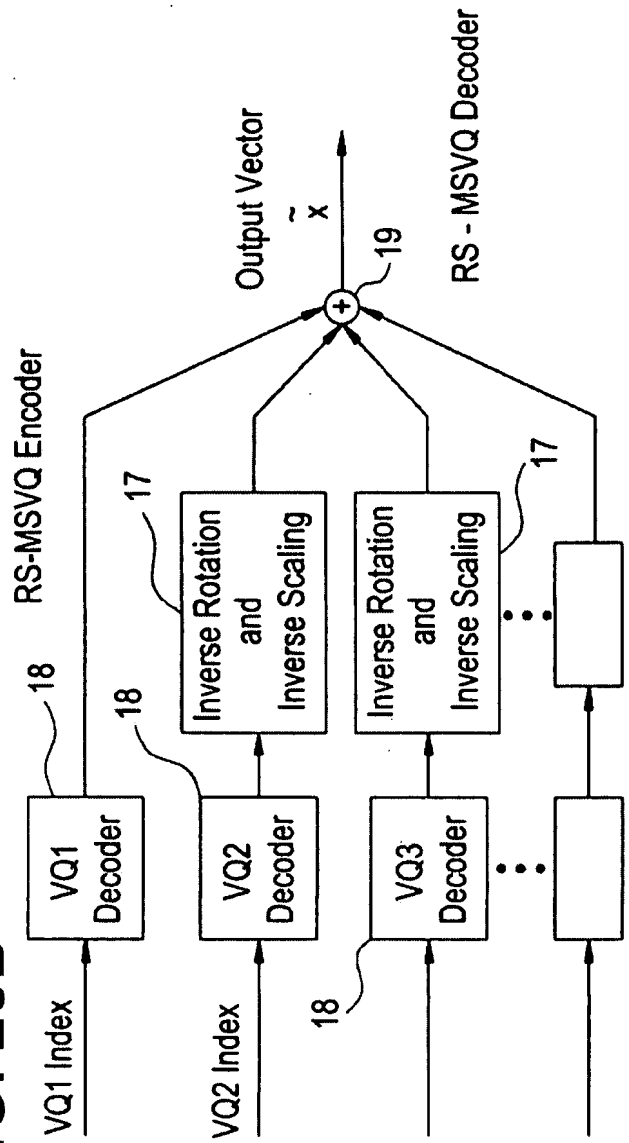
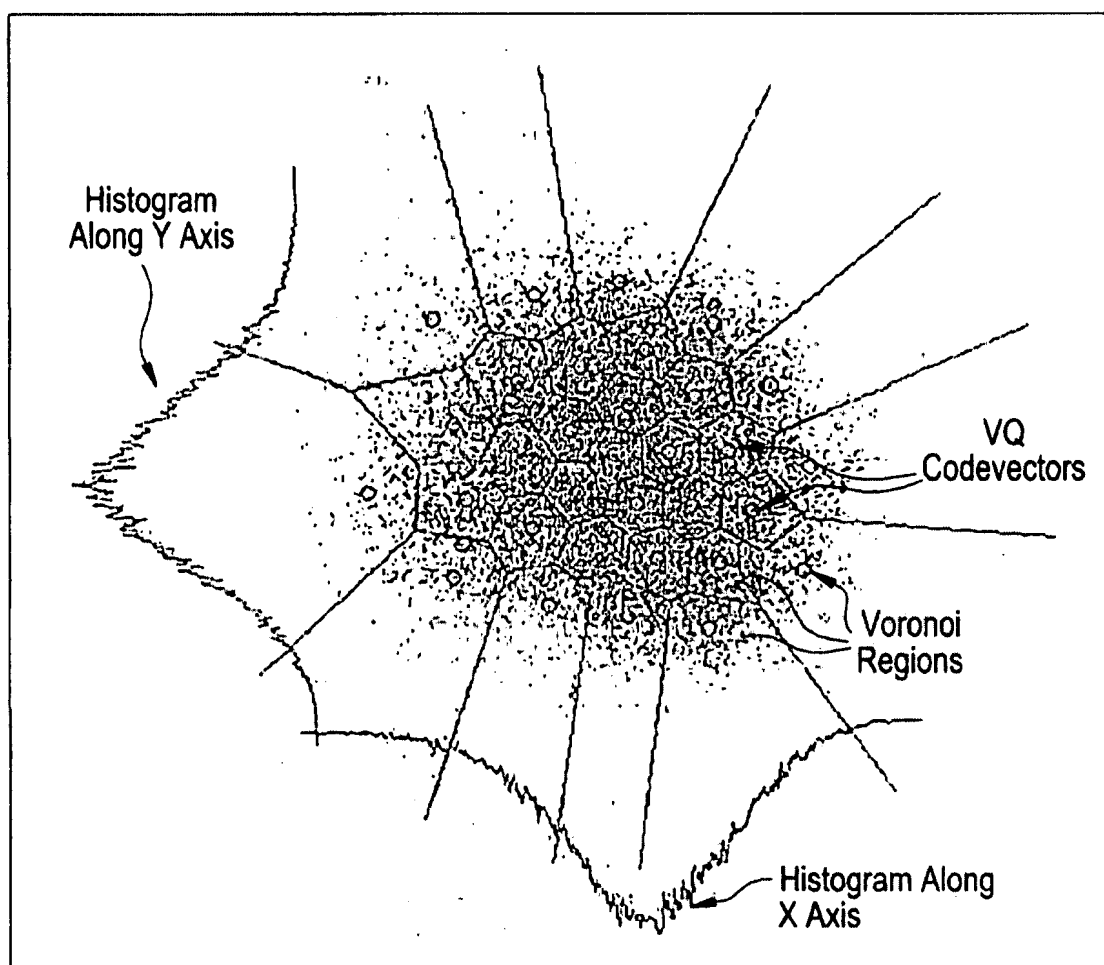


FIG. 23B



34/46

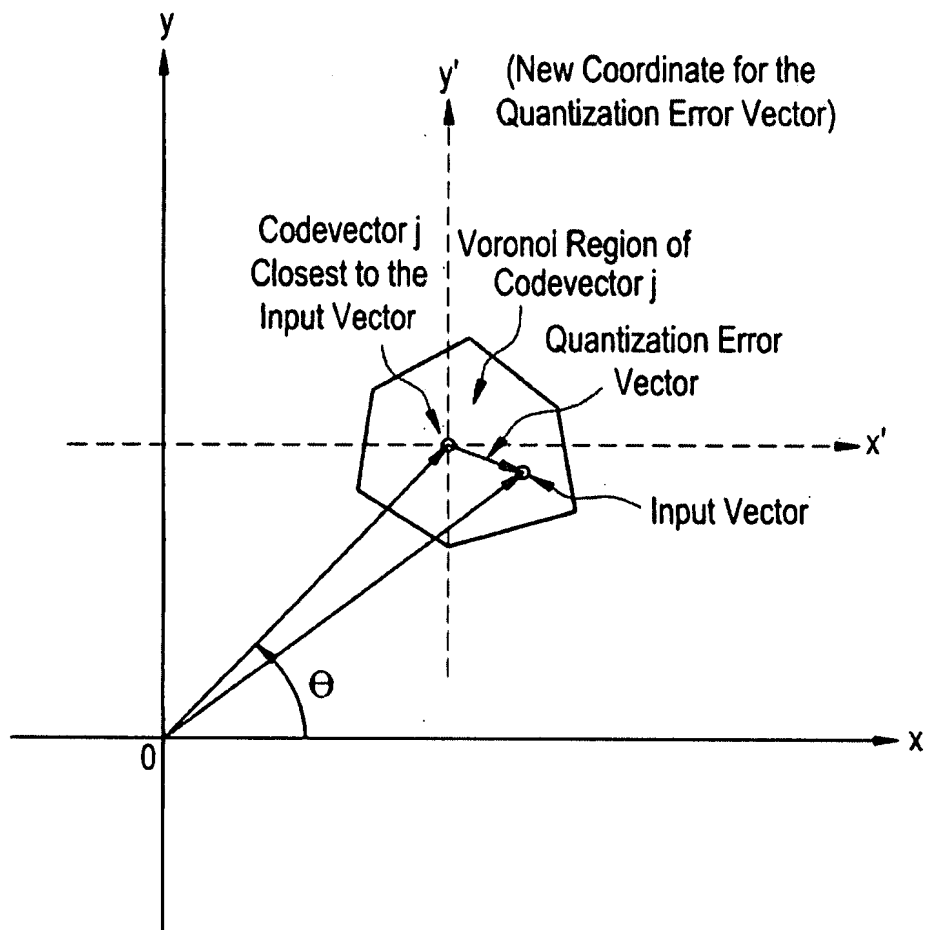
FIG. 24A



Scatter plot (gray dots) of 4th pair of ASIN(dc) intra-frame prediction error, the histogram along each direction, and the corresponding 1st-stage 5-bit VQ codebook and Voronoi regions.

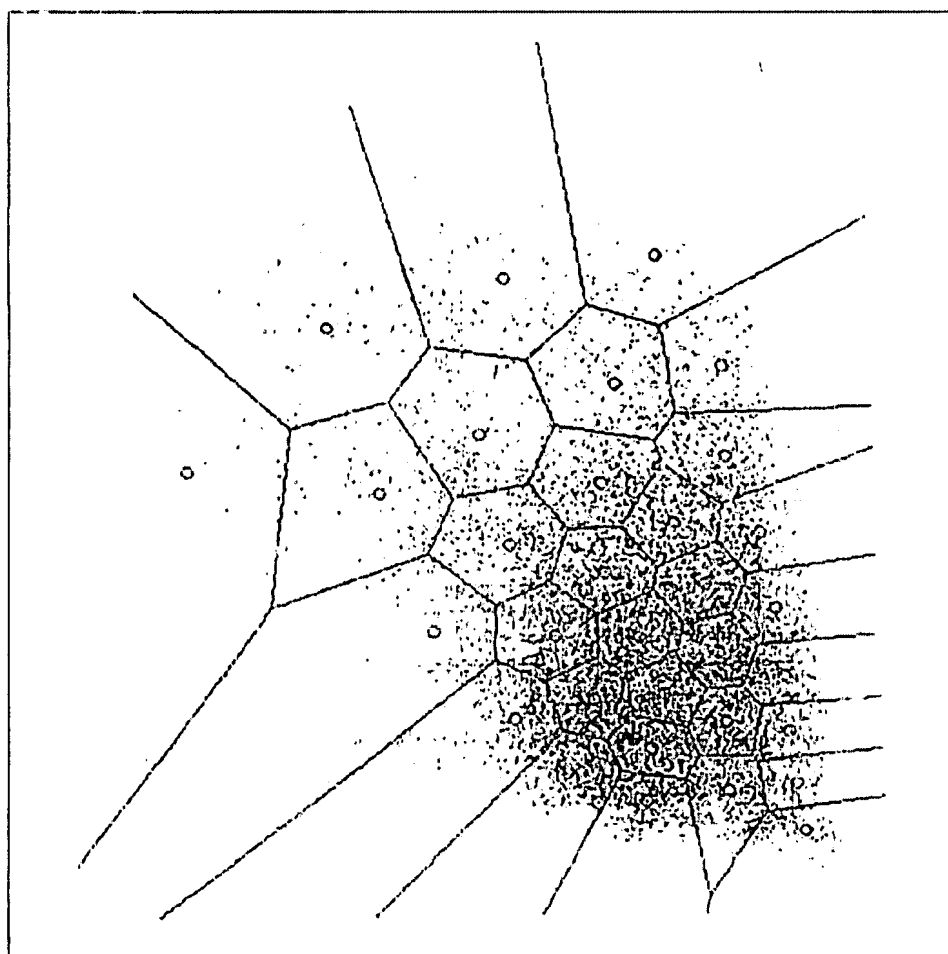
35/46

FIG. 24B



36/46

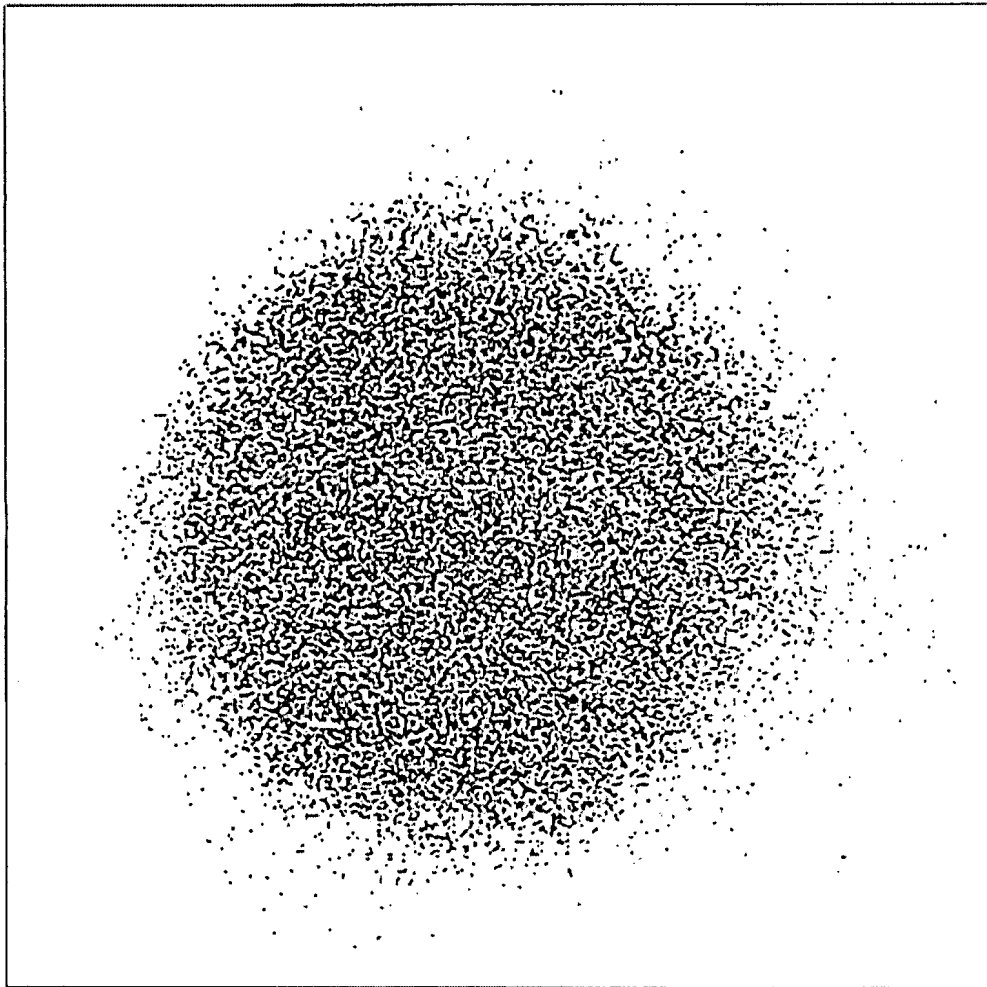
FIG. 24C



Scatter plot of 1st pair of ASIN(k) (gray dots) and
1st-stage VQ codebook (small circles) and the
corresponding voronoi cells

37/46

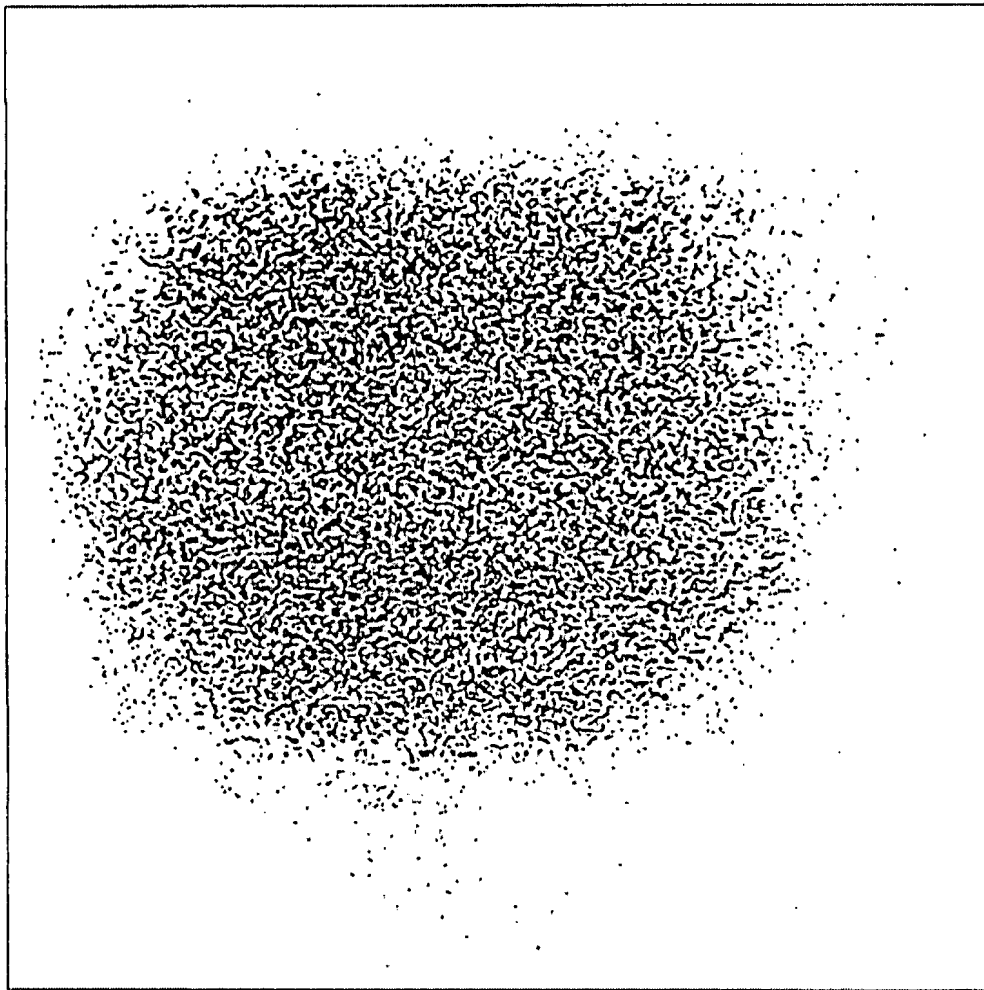
FIG. 25



Without hand-tuned rotation angles
inner cells 1st-stage VQ of 1st pair of ASIN(k)

38/46

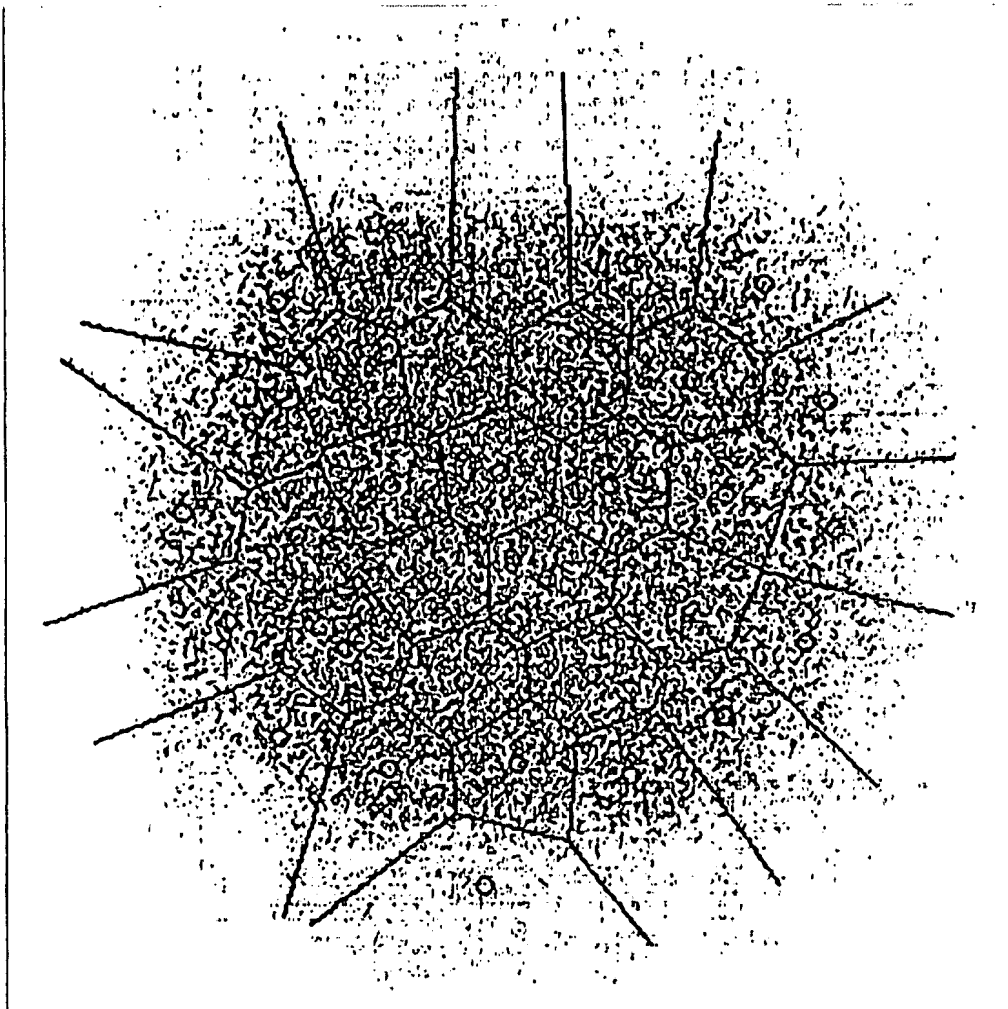
FIG. 26



With hand-tuned rotation angles
inner cells of 1st-stage VQ of 1st pair ASIN(k)

39/46

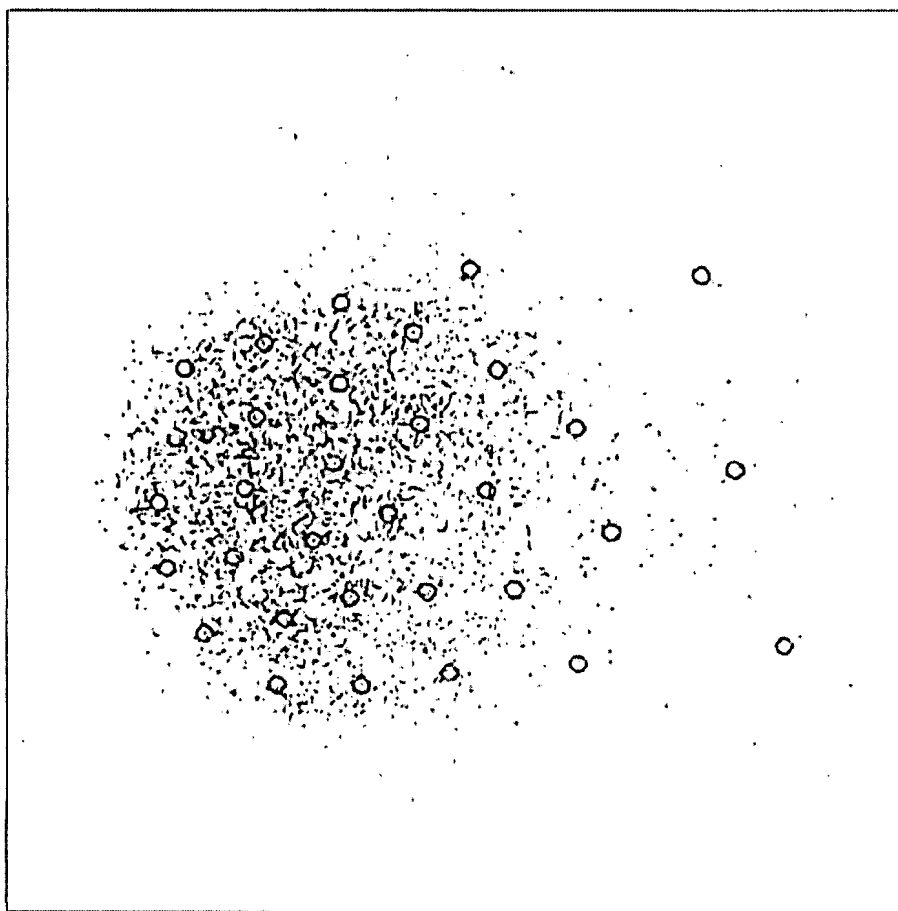
FIG. 27



Inner-cell 1st-stage VQ error vector distribution (gray dots)
(hand tuning) and corresponding 2nd stage VQ
codebook (small circles) for 1st pair of ASIN(k)

40/46

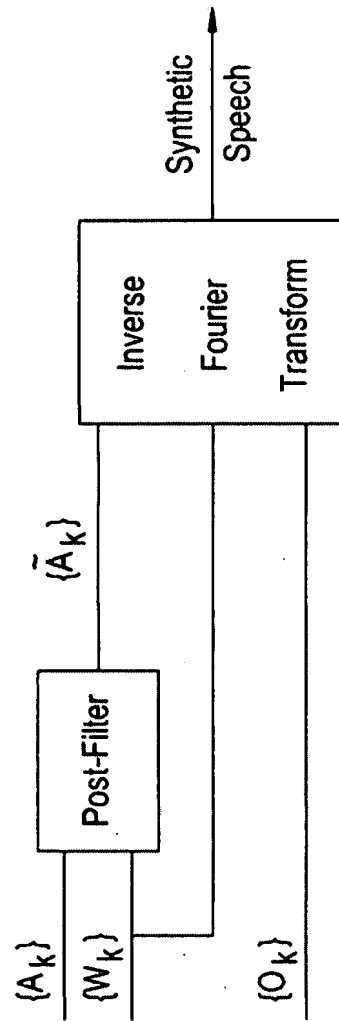
FIG. 28



Outer-cell 1st-stage VQ error vector distribution
and corresponding 2nd-stage VQ codebook (small circle)
for 1st pair of ASIN(k)

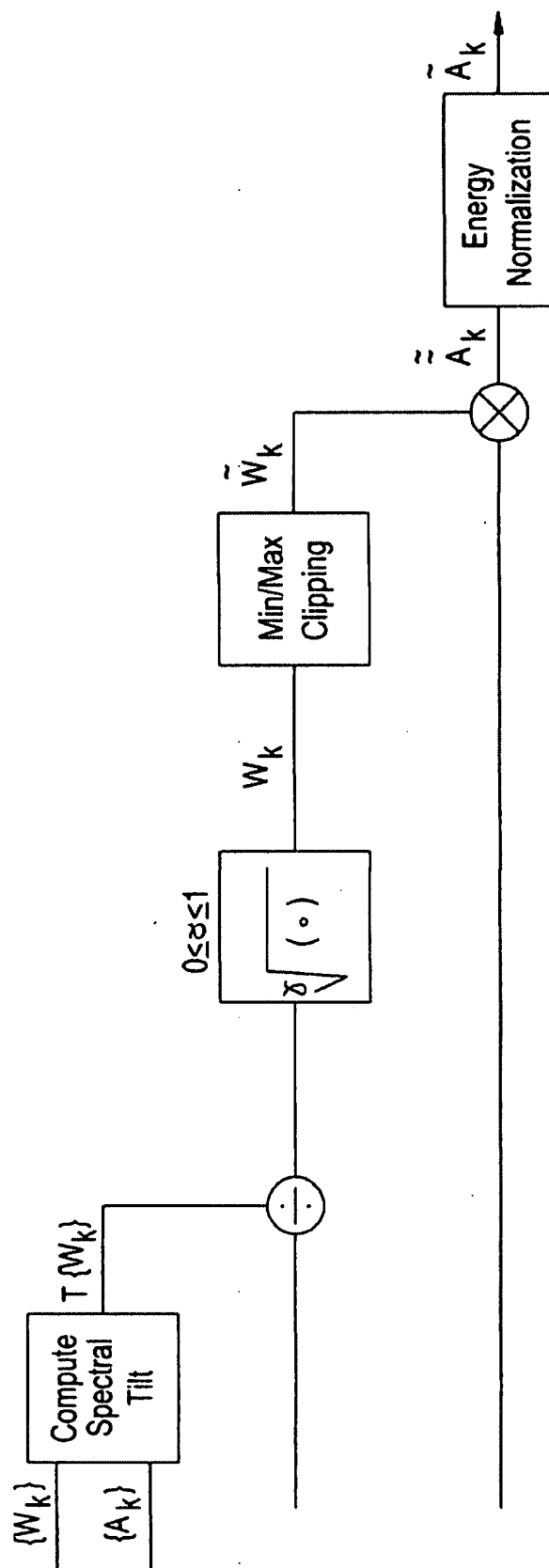
41/46

FIG. 29

 $\{A_k\}$ = k^{th} Sine-Wave Amplitude W_k = k^{th} Sine-Wave Frequency O_k = k^{th} Sine-Wave Phase \tilde{A}_k = k^{th} Post-Filtered Sine-Wave Amplitude

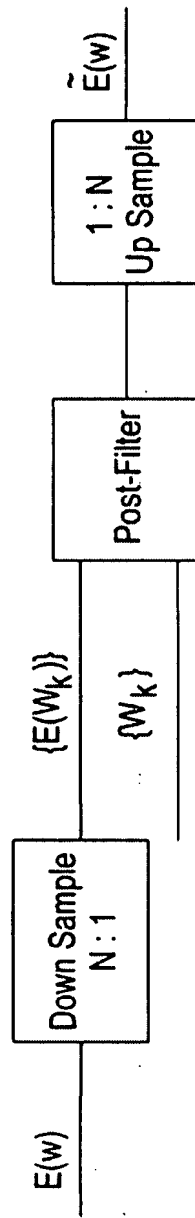
42/46

FIG. 30



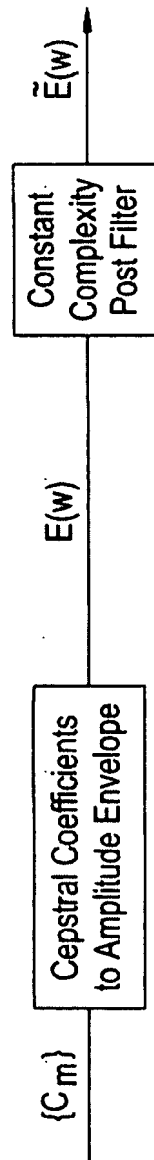
43/46

FIG. 31

 $E(w)$ = Amplitude Envelope W_k = Down Sampled Frequencies $\tilde{E}(w)$ = Post-Filtered Amplitude Envelope

44/46

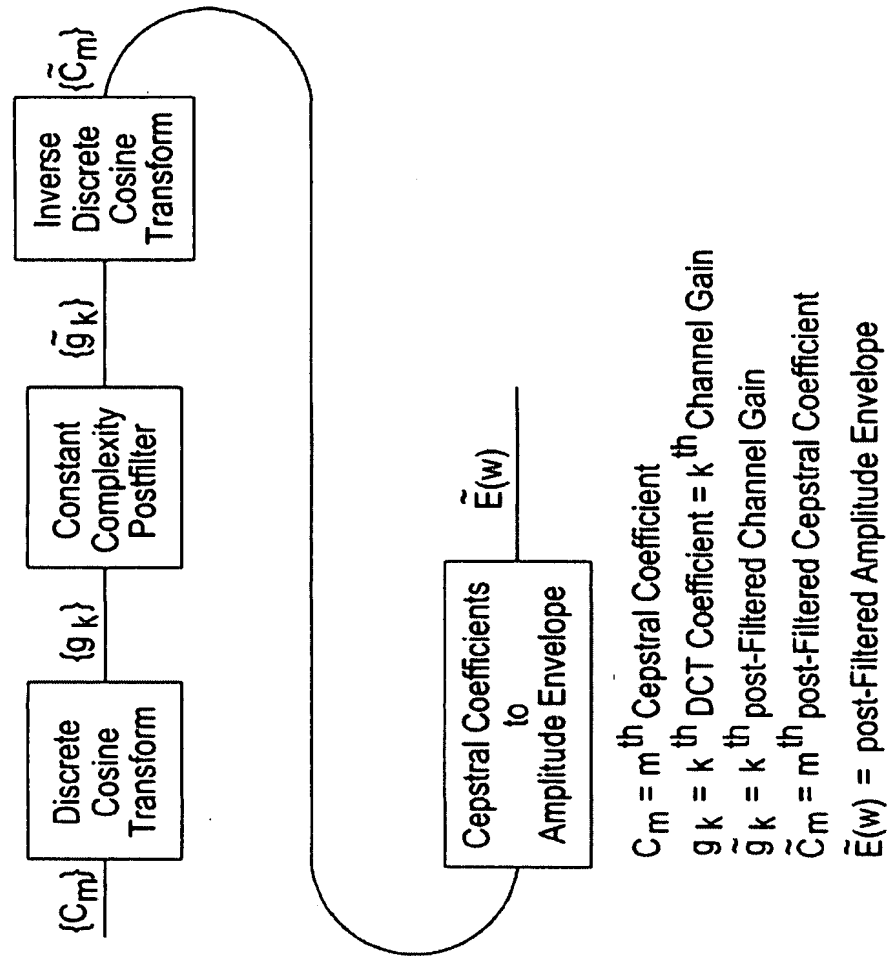
FIG. 32


 $C_m = m^{\text{th}}$ Cepstral Coefficient

 $E(w) =$ Amplitude Envelope

 $\tilde{E}(w) =$ Post-Filtered Amplitude Envelope

FIG. 33



46/46

FIG. 34

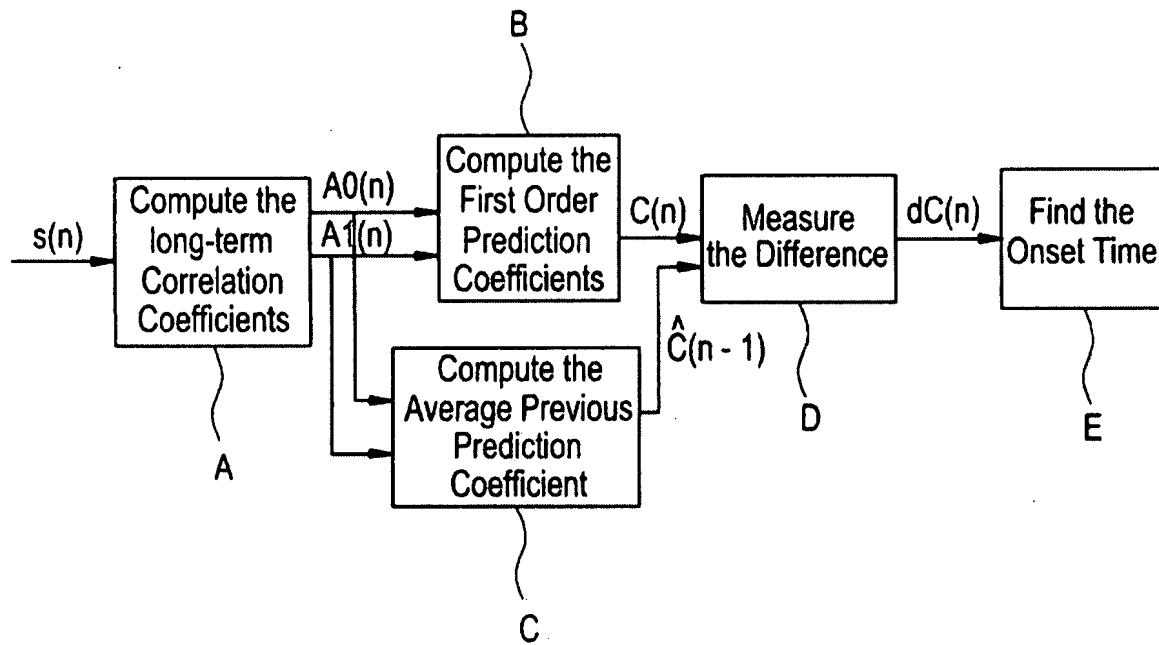


FIG. 35

